



DEPARTMENT OF

# INDUSTRIAL & SYSTEMS ENGINEERING





## Greetings from Madison!

As the end of the academic year approaches, the faculty, staff and students in the Department of Industrial and Systems Engineering are busy preparing for this period of transition. It is a time of both reflection and anticipation, and I am delighted to share the remarkable milestones our community has achieved over the past year.

The pulse of the department is stronger than ever. Our undergraduate student enrollment is at a five-year high, and the undergraduate program ranked fifth nationally among all public universities. Overall membership in our student organizations has also increased significantly this year, led by the Institute of Industrial and Systems Engineering with more than 110 active members.

We are also thrilled by the growth of our newest student-led organization, ISyE Connections, which now offers a dedicated pathway for alumni mentors. Seeing our seasoned professionals pour back into the next generation is a testament to the strength of the ISyE family.

Speaking of alumni, there are more opportunities than ever for our alumni to get involved and give back. Alumni engage in student project reviews, speaking opportunities, mentoring and more. Many choose to give back financially, directly supporting our scholarship program, student events, and other department initiatives. If you're interested in becoming more involved as an alum, please scan the QR code at the bottom of page 3 to visit our alumni webpage.

Our faculty, and the research they lead, continue to define ISyE as a global leader in higher education. This year, we are particularly proud to be ranked first among our peers in the Faculty Scholarly Productivity Index (per Academic Analytics). Beyond the data, our research is creating tangible "service to the greater good"—tackling critical challenges in manufacturing, healthcare delivery, public safety, and substance abuse treatment. We are also ensuring our curriculum evolves as fast as the industry itself, with new coursework in artificial intelligence designed to ensure our students are prepared for the next step in their academic and professional journeys.

On a more somber note, our community felt a profound loss this March with the passing of Professor Emeritus Dave Gustafson. As the namesake of our department chair professorship and a true pioneer in health systems engineering, Dave was a giant in our field. While we mourn his passing, we celebrate a legacy that has fundamentally improved healthcare systems worldwide. His influence will be felt in this department for generations to come.

Thank you for being part of our story. Whether you are a peer pushing the boundaries of the field or an alum carrying our values into the professional world, we are grateful for your continued interest and support.

**On, Wisconsin!**

**Shiyu Zhou**

David H. Gustafson Department Chair  
Vilas Distinguished Achievement Professor



### Accelerated Engineering Master's Programs

Our accelerated engineering master's programs allow graduates to get the jobs they want by obtaining an advanced degree in as little as one year. Delivered on campus and designed to be finished in 12–16 months, learners can choose from 12 programs in 7 disciplines.  
[go.wisc.edu/eng-accelerated](https://go.wisc.edu/eng-accelerated)

### Support the Department of Industrial and Systems Engineering

To make a gift to the department, go to:  
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[engineering.wisc.edu/isye](https://engineering.wisc.edu/isye)

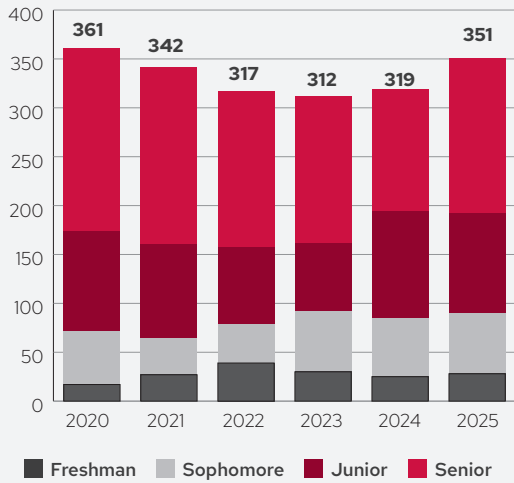
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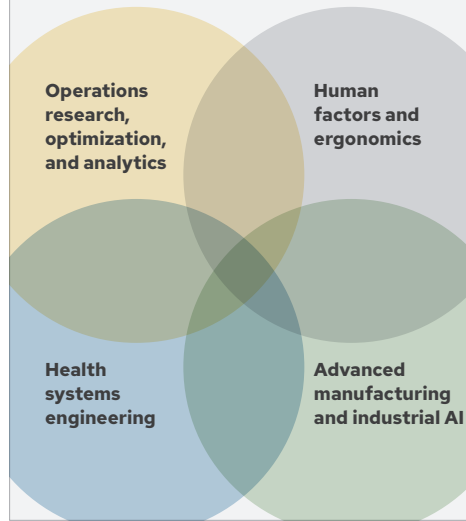
On the cover: The department put on the College of Engineering Hackathon/Makerthon during the fall 2025 semester. Assistant Professor Michael Biehler organized the event, which drew more than 70 students from across the college and the UW-Madison campus. Submitted photo.

# ISyE facts and stats

## Undergraduate fall enrollment



## Research areas



## Numbers

**#5**  
undergraduate ranking among public universities  
(U.S. News and World Report 2025 ranking)

**#5**  
graduate ranking among public universities  
(U.S. News and World Report 2025 ranking)

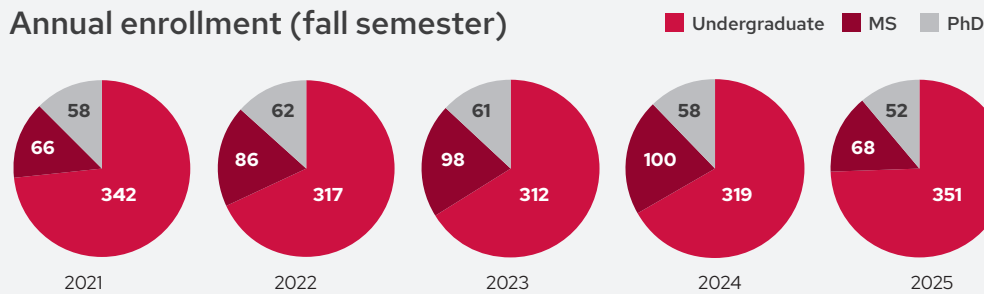
**#1**  
among our peers in Faculty Scholarly Productivity Index  
(source: Academic Analytics)

**344**  
student organization members 2025-26

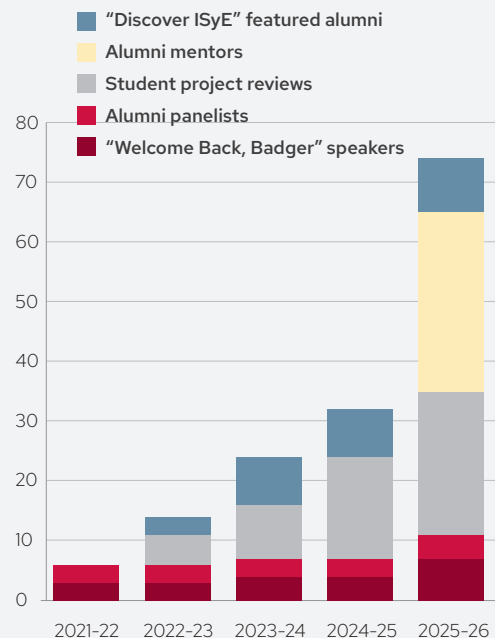
**8**  
NSF CAREER awardees

**15**  
fellows in professional societies

## Annual enrollment (fall semester)

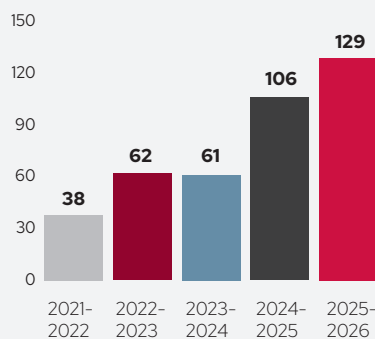


## Alumni engagement

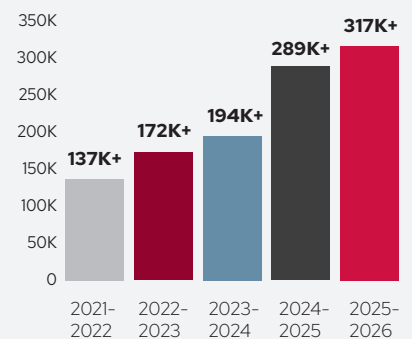


## Scholarships

### Total student recipients



### Total money awarded to students



Please scan to visit the alumni page on our website.



## Michini will use CAREER Award to improve post-disaster aid operations and more

While Assistant Professor Carla Michini and her family took their usual summer trip to her native Italy in 2025, this was no relaxing getaway. Michini spent much of the time in her seaside hometown of Roseto degli Abruzzi working on her proposal for the National Science Foundation’s prestigious Faculty Early Career Development Program—better known as the NSF CAREER Award.

But in between exhaustively outlining the aims of her project, developing the research plan and tracking down references to cite, she spotted a pair of gold-and-white-enamel hoop earrings at her sister Lucia’s jewelry shop. She decided she’d buy them to celebrate if she got the CAREER Award.

**“My goal is to rethink, adapt and apply combinatorial optimization tools in the framework of game theory, pushing their impact from centralized to decentralized decision-making.”**

Instead, Michini’s sisters surprised her with the earrings before the end of her trip. And, a few months later, Michini got the good news: She had, in fact, earned the CAREER Award, which provides nearly \$560,000 over five years in support of her research in combinatorial optimization. “They brought me luck,” she says.

In many ways, Michini’s work is about removing luck’s influence, by developing mathematical models and methods to solve sticky problems in complex systems. She exploits the structures of combinatorial optimization problems—problems in which you have a finite but huge set of options to choose from, such as the “traveling salesman problem” or the “knapsack problem”—to derive efficient algorithms for computing optimal or nearly optimal solutions.

For her CAREER Award project, Michini will focus on developing algorithms and models to enhance decision-making in decentralized systems. In systems such as supply chains, transportation or logistics, many individual decisions can have broader, system-wide effects. But often those decisions are made independently, without coordination.

“In a decentralized system, the final outcome might not be aligned with what would be a system optimum,” says Michini. “Due to the lack of coordination, there is inefficiency, which we would like to decrease. But to do that, first of all, we need models that capture these interdependencies and are able to predict what could be an equilibrium of the system. And then we want to analyze the gap between the system optimum and what we can instead achieve with an equilibrium in a decentralized system. My goal is to rethink, adapt and apply combinatorial optimization tools in the framework of game theory, pushing their impact from centralized to decentralized decision-making.”

Specifically, Michini plans to test her toolset on post-disaster aid operations, which involve scattered supply chains and complex transportation networks.

“Humanitarian organizations have a common goal to help people that are in need,” she says. “They act in a decentralized way, so there might be issues coming from congestion of scarce resources, and also the lack of coordination means, for example, cost-sharing mechanisms are not exploited. We can enhance coordination hopefully through better models.”

Michini will also use the CAREER Award funding to develop a new graduate-level course on game theory, which intersects with her work in combinatorial optimization. She also plans to organize visits from researchers in the field to meet with students to discuss both their work and their career paths.

“I want to break that barrier that sometimes exists between professors and students and try to have the students think, ‘You know, I can also maybe achieve that,’” she says. “Hopefully we can engage them.”

## Undergraduate students explore how to do the right thing when money matters

A video plays on the projector screens of a lecture hall in the Mechanical Engineering Building, telling undergraduate students in ISyE 313: *Engineering Economic Analysis* the tragic tale of the Ford Pinto.

The students—with a little probing from Professor Laura Albert—then spend the next half hour or so debating some of the ethical questions entangled in the story of the ill-fated 1970s car. Its fuel tank, positioned in the back of the car like other subcompact cars of that era, made it susceptible to fires, even in low-speed crashes. Ford's somewhat ham-handed response, exposed in a juicy if distorted media report, cemented the vehicle's legacy as a cautionary tale.

One student opines that Ford

**"I'm hoping they walk away knowing that engineering is about more than just applying the right formula, that there are many situations involving personal responsibility that they need to be aware of, and they feel equipped to handle those situations."**

**—Laura Albert**

management bore more responsibility than the company's engineers, who were following established federal safety standards.

"They're an American company; they know what American car culture and mobility culture is like," adds first-year industrial engineering major Mia Santini.

Another student put the onus on the National Highway Traffic Safety Administration, which sets those safety standards. Albert chimes in throughout, adding context—for example, the Pinto actually ranked behind other comparable models in fatalities per miles driven.



Long a required class for industrial engineering majors at UW-Madison, a revamped version of ISyE 313 now blends engineering ethics and a dash of personal finance with its usual overview of large-scale financial analysis techniques.

"In this course, I tell students the main theme is making big decisions involving money," says Albert, who took over the course in fall 2024 and continues to make improvements. "I'm hoping they

walk away knowing that engineering is about more than just applying the right formula, that there are many situations involving personal responsibility that they need to be aware of, and they feel equipped to handle those situations."

Students learn financial fundamentals for evaluating investment decisions, such as cost-volume-profit analyses, discounted cash flow methods and capital budgeting. But, Albert concedes, those kinds of large, organizational-level questions can seem far removed from students' daily lives. Which is why she also infuses personal finance literacy, soliciting topics of interest to students, such as cryptocurrency and retirement

planning, and concluding with a final lecture that distills her top 10 pieces of financial advice.

"It relates directly to your life. It can affect your life and how you act," says Fahad Alshatb, a junior exchange student from Saudi Arabia.

Because ethical dilemmas often involve financial ramifications, Albert wanted to build on a college-wide initiative and integrate a strong engineering ethics focus throughout the course. During the semester, students discuss case studies: the Pinto; the 2023 implosion of the OceanGate Titan submersible vessel; malfunctions in Boeing's 737 MAX model; and the fraudulent biomedical startup Theranos. (Tyler Shultz, the engineer-turned-whistleblower in the Theranos case, spoke at the college's Ethics in Engineering Distinguished Seminar in 2021.)

"I think the whole course is very practical for their personal and professional lives, but I really want them to take away the engineering ethics," says Albert. "If they can practice engineering in an ethical way, they would make me really proud. And life will test that. It's not just about passing a test. Life will test them."

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Students discuss the case of the Ford Pinto, debating which parties are most to blame. Photo: Tom Ziemer



## Remembering health systems engineering pioneer Gustafson

Dave Gustafson, a pioneer in applying technology to human-centered health systems and a longtime professor in ISyE, died March 3, 2026. He was 85 years old.

A member of the National Academy of Engineering, Gustafson began his prolific six-decade career at UW-Madison in 1966 as a newly minted PhD graduate from the University of Michigan. When he started, the college didn't even have an industrial engineering department; he helped form what's now ISyE with a handful of faculty members from the mechanical engineering department.

Gustafson's influential research focused on healthcare systems engineering, establishing UW-Madison as a national leader in the field. Over the course of his career, he worked on early computer systems for mental health crises, predictive analytics for quality

of care, computer programs to support teen health, computer and mobile applications for breast and lung cancer patients, technology tools to support eldercare, and more.

In the late 1980s, he founded the Center for Health Enhancement Systems Studies (CHES) to support this work. With funding from the W.K. Kellogg Foundation and the Agency for Health Care Policy and Research, Gustafson and his team created the Comprehensive Health Enhancement Support System, a computer system they initially used to support patients with HIV or AIDS. The system became a template for future tools to help patients with Alzheimer's disease, to promote healthy aging, to improve stress management, to help adolescents manage asthma, and to provide a suite of resources to patients leaving treatment for alcohol use disorder.

In the early 2000s, CHES expanded into systematically improving addiction treatment and continues to develop new technologies and methods to improve

the behavioral healthcare field. The center regularly earns multimillion dollar grants for its process improvement leadership from the federal government. In retirement, Gustafson was an exceptionally active emeritus faculty member, working on CHES projects that included developing a Wisconsin-specific COVID-19 information app in early 2020.

"I was privileged to be part of groups of people who made an enormous difference in healthcare," Gustafson said during a 2020 interview.

When ISyE received alumni gifts to endow its chair position in 2020, Gustafson was the natural choice for a namesake. As then-department-chair Jeffrey Linderoth said at the time, "The primary person who put us on the map for health systems research—I don't think it's overstating—was Dave Gustafson."

Gustafson is survived by his wife, Rea, their daughters Lori and Shelley, and their son Dave Jr., a longtime CHES staff member.

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## Hackathon/Makerthon brings students together to solve industry challenges

Sleep was on Nicolas Greaves and his groupmates' to-do list. But, with motors to test, force calculations to crunch, prototype components to 3D print and more, the tasks kept stacking up.

In the end, Greaves and his friends caught about an hour of shuteye while designing a winning scissor-lift system for a patient-positioning device over the course of 24 hours as part of the College of Engineering Hackathon/Makerthon, organized by Assistant Professor Michael Biehler.

"When we made our model, we had these grand ideas," says Greaves, a senior from Milwaukee double majoring in mechanical engineering and computer sciences. "It was a good lesson in resource and time management. At the very end, we were definitely rushing as much as possible. We had three hands going in this small assembly."

Greaves and his groupmates were among the more than 70 students to participate in the Hackathon/Makerthon, put on by ISyE and the Grainger Engineering Design Innovation Laboratory. The event, held at the Design Innovation Lab @ Wendt Commons, drew students from across campus, with nine different majors represented.

Working in teams, students spent 24 hours creating solutions for their pick of three challenges supplied by industry partners Accuray and Plexus.

The winning teams and others earned cash prizes, while all the students got to keep the devices they created. Not to mention free catered meals throughout both days, always a hit with college students.

"That's the spirit we wanted to encourage: Collaborative problem-solving and different majors coming together, working on a real industry challenge," says Biehler. "Give them more exposure to what it is that industry is looking for, prepare them. And also on the other side, get more industry on campus."

Biehler participated in a large hackathon as both a student and a research assistant at Karlsruhe Institute of Technology in his native Germany. This time, he and his graduate students served as on-site mentors for the student teams, along with a staff engineer from Accuray; Plexus personnel held remote consultations with students as well.

The event also brought a wider range of students into the Design Innovation Lab @ Wendt (formerly known as the UW Makerspace), which offers a variety of rapid-prototyping equipment.

"I think this is one example of the Wisconsin Idea: How can what we do here make an impact on the state?" says Biehler. "Bring in local companies, connect them with students, give them more opportunity beyond standing in line at the career fair—actually make something cool in 24 hours that companies might use in their operation."

## DEPARTMENT NEWS

### Faculty grants and honors

Professor **Laura Albert** is one of the inaugural Teaching and Learning AI Fellows at UW-Madison.

Professor **Jeffrey Linderoth** received a \$1.2 million grant from the Office of Naval Research to use optimization to improve maritime operations.

Assistant Professor **Yonatan Mintz** is part of two new efforts funded by the National Institutes of Health to use data science to aid caretakers of dementia patients in rural settings. Mintz will use reinforcement learning to help deliver personalized recommendations for resources through an app and will help fine tune an AI agent that can chat with caregivers.

### Student honors

PhD student **Vipul Bansal**, advised by Vilas Distinguished Achievement Professor **Shiyu Zhou**, authored the paper named best in the 2025 *IISE Transactions* focus issue on data, science, quality and reliability. Bansal also received a 2025-26 Early Excellence in Teaching Award as part of the UW-Madison teaching assistant awards.

PhD student **Patrick Fuller**, advised by Assistant Professor **Jackie Cha**, was named a Human Factors and Ergonomics Society (HFES) student member with honors.

PhD student **Jeevan Jayasuriya**, in collaboration with undergraduate student **Adam Easton**, won the Aerospace Technical Group Best Student Paper Award at the HFES annual meeting.

PhD student **Soo Yeon Kim**, advised by Emerson Electric Quality and Productivity Professor **John Lee**, was one of three finalists for the prestigious Alphonse Chapanis Award.

Undergraduate student **Emilie Lesinski** placed second in the GAMSPy Student Competition.

PhD student **Oliver Nguyen**, a member of Professor **Doug Wiegmann's** research lab, won Best Lightning Talk Q&A at the WisconsinINFORMATICS conference.

PhD student **Jahinaya Parker**, who is advised by Lee and Associate Professor **Anthony McDonald**, was a finalist in the UW-Madison Three Minute Thesis competition.

Our student chapter of INFORMS was awarded cum laude status, while our chapter of the Human Factors and Ergonomics Society earned gold status.

## ALUMNI NEWS

### Alumni spotlight: Zainab Ghadiyali, tech founder

When **Zainab Ghadiyali** (MS '12) arrived at UW-Madison, she didn't plan to become a tech founder. She planned to fix healthcare.

But curiosity has a way of rewriting plans.

A chance encounter with systems engineering introduced her to a new kind of problem-solving, one that used data, design, and optimization to make life better at scale. That discovery set her on a path that would take her from Wisconsin research labs to Silicon Valley boardrooms, and eventually to the frontlines of AI innovation.

Today, Ghadiyali is the founder of Stackbirds, an AI infrastructure platform helping small businesses hire and manage digital agents in minutes. Her journey, from re-architecting Airbnb's codebase to launching Facebook's first healthcare product, embodies the same spirit she found in Madison: use technology to help people, and never stop learning.



Scan the QR code to read more about Ghadiyali's academic and professional journey.

### Discover ISyE brings together students, alumni

We hosted our annual student-alumni networking event, "Discover ISyE" in January 2026. This event is designed

to bridge the gap between academic theory and industry practice by providing a platform for students from across the college to engage in high-level, one-on-one dialogues regarding the diverse career trajectories available within the field.

The forum featured a distinguished cohort of alumni representing a broad spectrum of sectors, including healthcare operations, data science, supply chain management, and ergonomic consulting. This diverse representation highlighted the versatile application of ISyE principles in solving complex global challenges.

Alumni participants included:

- **Jake Birrenkott**: senior sales engineer, Isthmus Engineering & Manufacturing Co-op
- **Jodi Glunz**, MS, CPE: ergonomics consultant
- **Brian Tennant**: healthcare operational leader, UW Health Care Direct
- **Jeff Roznowski**: telecommunications executive (retired) and community advocate
- **James Sandine**: operations management leadership program, GE Healthcare
- **Rachel Kayman**: operations management leadership program, GE Healthcare
- **Zachary Rottier**: enterprise data science director, American Family Insurance
- **Dan Robin**: chief supply chain officer, Monarca Authentic Snacks
- **Paul Meyer**: chief operating officer (retired), The Alliance

### Two honors for Barton

**Hanna Barton** (BSBME '18, MSIE '19, PhDIE '23) received the HFES Inclusion Award for Service and the Robert L. Wears Early Career Award, awarded by the HFES Healthcare Technical Group.

### Stay in touch and get involved!



Scan the QR code to visit our alumni page.



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and Systems Engineering**  
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Joel Hallberg

### **Ranjana Mehta on human-technology interaction and worker fatigue**

Ranjana Mehta, the Grainger Institute for Engineering Professor, studies human behavior and the brain in working environments. Her research focuses on how people interact with emerging technologies such as robotics and augmented or virtual reality, and how those technologies can be designed to maximize impact while accounting for the challenges and limitations that accompany new developments. She also studies fatigue, especially in high-stakes environments such as emergency first response and the energy sector.

In an interview, Mehta discusses how we interact with new technologies and how fatigue affects our ability to work with them.



Scan the QR code to read the Q&A on our website.