



*Vision 2025:* **A Strategic Plan**

for Iowa State University's  
Department of Mechanical Engineering





## Our Responsibility

Our heritage as one of the largest and most important mechanical engineering programs in the nation traces back to Iowa State University's founding. The Morrill Act, under the signature of Abraham Lincoln, established a public system of higher education in the areas of agriculture and the mechanic arts, accessible to anyone who aspired to it. Iowa was the first state to accept the act's provisions, and indeed, Iowa State's first diploma was awarded in the field of mechanical engineering. Today, mechanical engineering is the most popular major on campus, and our advancement is closely coupled with the university's advancement. We are strong today because of the hard work of those who came before us, and by embracing the ideals of the modern land-grant institution—learning, discovery, and engagement—our future is one of opportunity.





*Working together to improve society in Iowa and beyond through the science and technology of mechanical engineering.*

## Our Mission

We are a community of faculty, staff, students, and alumni—and industrial and governmental partners—working together to improve society in Iowa and beyond through the science and technology of mechanical engineering.

As scholars, we create and share knowledge at the highest levels through our educational and research programs. We are committed to improving lives and livelihoods through mechanical engineering research and by delivering a superior and forward-looking educational experience to our students. We strive to be discipline leading in our endeavors, and our scholarship values innovations and impacts that are distinctive, recognized, and enduring. As professionals, we promote the virtues of teamwork, an exemplary standard of conduct that defines an enabling environment, and leadership in providing valued service and technical expertise.



## Our Vision

Through the excellence of our people, our department will be recognized as a leader of its discipline that exemplifies the best land-grant traditions. Our department will be a desirable place to study and work, with our community comprising the best and the brightest, because of research and educational programs that are grounded in the mechanical engineering sciences and set within the context of meeting important societal needs.



# Our Priorities

Children born today will enroll at Iowa State in the year 2025. Why will they choose to study mechanical engineering? How will our research and educational programs evolve in the light of emerging demographic, globalization, technological, and financial trends? We will pursue the following priorities to reinforce our recognized strengths and advance our vision for 2025.

## 1. Extend our pillars of research

**excellence:** Creating knowledge through research, innovating to improve society—these are the hallmarks of our research programs. Our faculty members are experienced researchers, grounded in the fundamental disciplines and focused on solving contemporary problems.

- Advance research programs in biological and nanoscale sciences, clean energy technologies, complex fluid systems, design and manufacturing innovation, and simulation and visualization
- Embrace cross-disciplinary research
- Lead collaborative research ventures and proposals
- Develop unique laboratory and experimental capabilities
- Recruit and retain outstanding faculty who are, or will become, leaders in their field

## 2. Strengthen our graduate program:

The success and visibility of our research enterprise couples with a thriving graduate program, a cornerstone of our department.

- Build upon the quality and impact of our master's and doctoral programs
- Recruit students proactively beyond traditional borders
- Align the admissions process with the needs of faculty researchers
- Deploy a coursework-only master's program
- Instill the best traits of scholarship in our graduate student community

## 3. Enrich our undergraduate program:

Mechanical engineering has been described by some as the liberal arts degree of the twenty-first century, and we accept the challenge and responsibility of preparing students to be life-long learners and creative thinkers who adapt to and advance new technologies.

- Engage our students to understand the social context in which mechanical engineering is practiced
- Add value to our program through new technologies and pedagogical research
- Develop recruiting and retention initiatives for women and traditionally underrepresented students
- Develop forward-looking courses and curricular options that meet the profession's needs
- Promote creativity and innovation through design, laboratory, and hands-on experiences

## 4. Develop our people:

The continued professional growth of our faculty, staff, and students is key to our future so that the department will continue to be a destination of choice for people to study, work, and learn.

- Provide structured and informal mentorship opportunities for newly hired faculty
- Promote a culture that is dynamic, respectful, collegial, and collaborative
- Support the continued professional development of staff
- Support the growth of faculty, staff, and students into leadership roles

## 5. Build our community:

Only through effective internal operations can our faculty, staff, and students effectively pursue individual professional goals, as well as the collective goals of the department and university.

- Broadly share our message internally and externally
- Provide informal opportunities for networking and collaboration
- Utilize our physical space effectively
- Adopt the best practices of private institutions
- Leverage the experiences and perspectives of advisory councils