



University at Buffalo  
Department of Industrial  
and Systems Engineering  
School of Engineering and Applied Sciences

# STRATEGIC PLAN 2020

# [ MOVING FORWARD ]

Through a process of departmental assessment and planning in which students, alumni, faculty, staff, and university administration took part, we developed our strategic plan to further enhance our reputation as a department and as a leader of Industrial and Systems Engineering (ISE) programs in the U.S. As we approach our 75th anniversary and in the years that follow, this document will serve as our strategic roadmap for 2020-2023.

We gratefully acknowledge the guidance and oversight of Richard Steinberg, Ph.D, Executive in Residence, School of Management, University at Buffalo





# [ OUR VISION ]

We provide a **rich academic environment** that supports **ambitious and diverse life-long professional goals** of our students, alumni, staff and faculty. We are an **inclusive academic community** known for its **leadership** and contributions to the ISE profession through **exceptional collaborative** and **interdisciplinary research** and **education**. We are **widely known** and **respected** in our region, state, nation and world.





# [ OUR MISSION ]

Our culture fosters mutual support and respect for all members of the ISE community—undergraduate and graduate students, alumni, organizational and community partners, staff and faculty. We provide a scholarly home to people from all over the world.

Our mission is to:

- Advance the ISE discipline through **successful leadership, innovative research** and **sound scholarship**.
- Educate students via a variety of pedagogical approaches that **support different learning styles** to prepare our students for **professional success** and **encourage life-long learning**.
- Benefit our organizational and community partners and alumni through **high-quality interactions** with faculty, students and staff.





# [ OUR VALUES ]

- **We solve** relevant problems in manufacturing, healthcare, security and defense, energy and transportation systems through research that is often interdisciplinary and convergent.
- **We provide** our students with a first-class education to ensure they are prepared for success.
- **We support** the life-long professional goals of students, alumni, staff and faculty.
- **We forecast** educational needs and industry trends to better position graduates for professional success.
- **We embrace** diversity and inclusion in all of its forms.
- **We promote** innovation to develop new ideas, processes and products.
- **We strive** to continuously enhance our research and educational programs.
- **We advance** the industrial and systems engineering profession through leadership in research, service and education.





# [ OUR TRADITION ]

As one of the engineering school's first departments, the industrial engineering department was established in 1946 as a direct result of a post-World War II need for highly skilled engineers to enhance technology in society. While our work initially focused on advancing traditional manufacturing and service industry processes, our faculty and students very quickly began applying industrial engineering methodologies to solve complex problems in other domains.

Over the years, we have established and maintained a reputation of being extremely collegial in our interactions with students, fellow ISE faculty, staff, and all of our partners. The problems we solve often require expertise from multiple perspectives, and we build close relationships with people from other disciplines and backgrounds. We apply interdisciplinary approaches to make impactful research contributions to health, transportation, logistics, defense, manufacturing and other systems.

The size of our faculty, staff and student body has grown substantially over the past decade. Even during this time of rapid growth, our reputation of being among the most collegial and student-centered departments in the university continues.





The demand for industrial engineers has steadily increased over the years in part due to the wide variety of industries that benefit from the profession. With the increased need for a STEM-educated workforce, the industrial engineering profession is expected to continue to grow faster than most occupations over the next decade. Over the past 10 years, our department has experienced a period of unprecedented growth in terms of graduate student enrollment, faculty hiring and research achievements. We are confident that our department will continue to succeed and expand further in the coming years as we enhance our presence in research areas of growing national interest, and as we explore opportunities to educate students in ways that were previously not possible. We will build upon accomplishments in operations research, production and service systems, and human factors. We will continue to address important challenges in advanced manufacturing, health and healthcare, security and defense, energy systems and transportation and logistics systems.

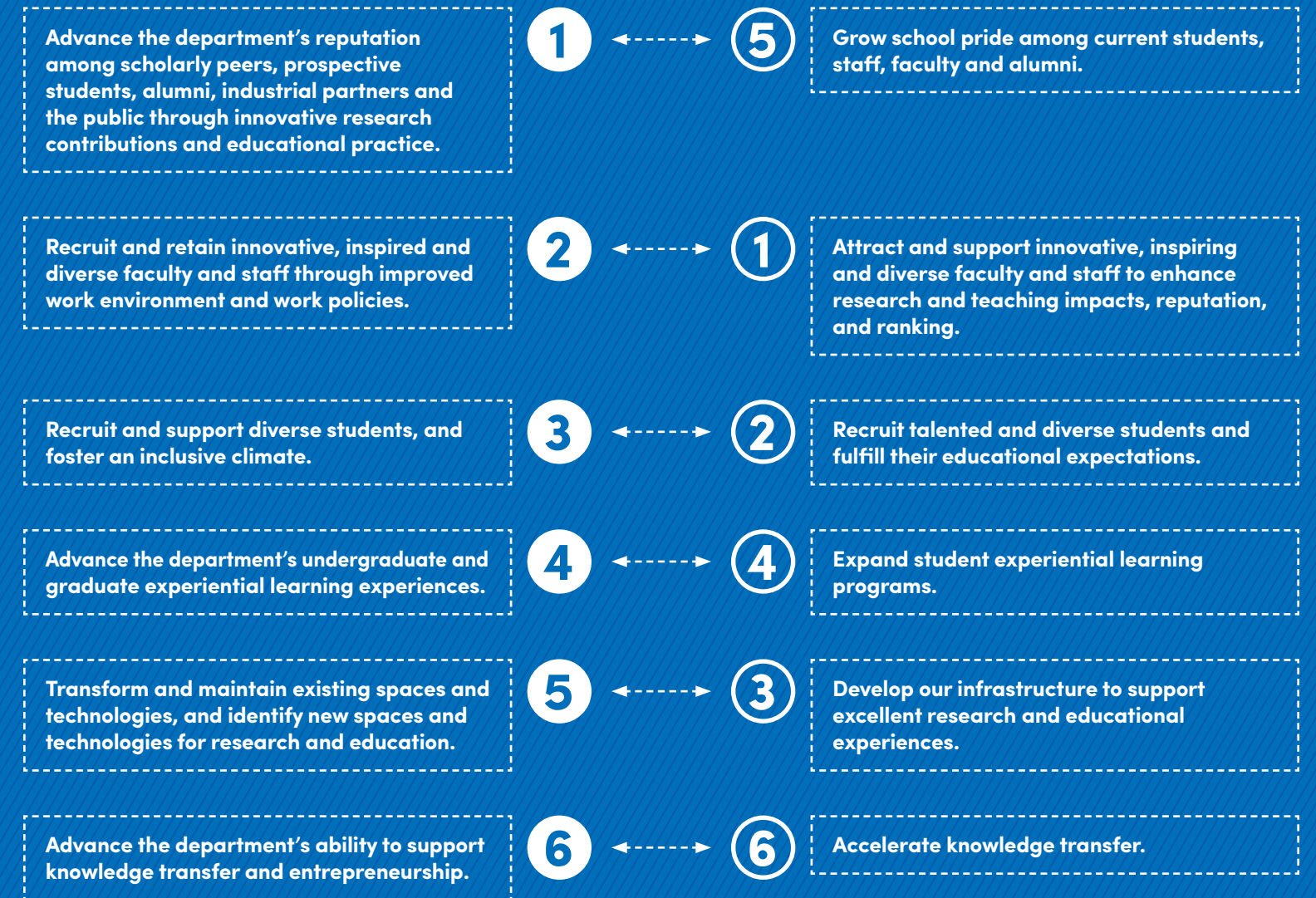
Within this context, our strategic goals over the next few years follow closely those of SEAS. Our strategic goals are:

- 1 Advance the **department's reputation** among scholarly peers, prospective students, alumni, industrial partners and the public through **innovative research contributions** and **educational practice**.
- 2 Recruit and retain **innovative, inspired** and **diverse faculty** and **staff** through improved work environment and work policies.
- 3 Recruit and support **diverse students**, and foster an **inclusive climate**.
- 4 Advance the department's undergraduate and graduate **experiential learning experiences**.
- 5 Transform and maintain existing spaces and technologies, and **identify new spaces** and **technologies** for research and education.
- 6 Advance the department's ability to support **knowledge transfer** and **entrepreneurship**.

The ISE Strategic Goals align very closely with the SEAS Strategic Goals, but have been modified to better reflect the mission, tradition and values of the department.

**ISE STRATEGIC GOALS**

**SEAS STRATEGIC GOALS**

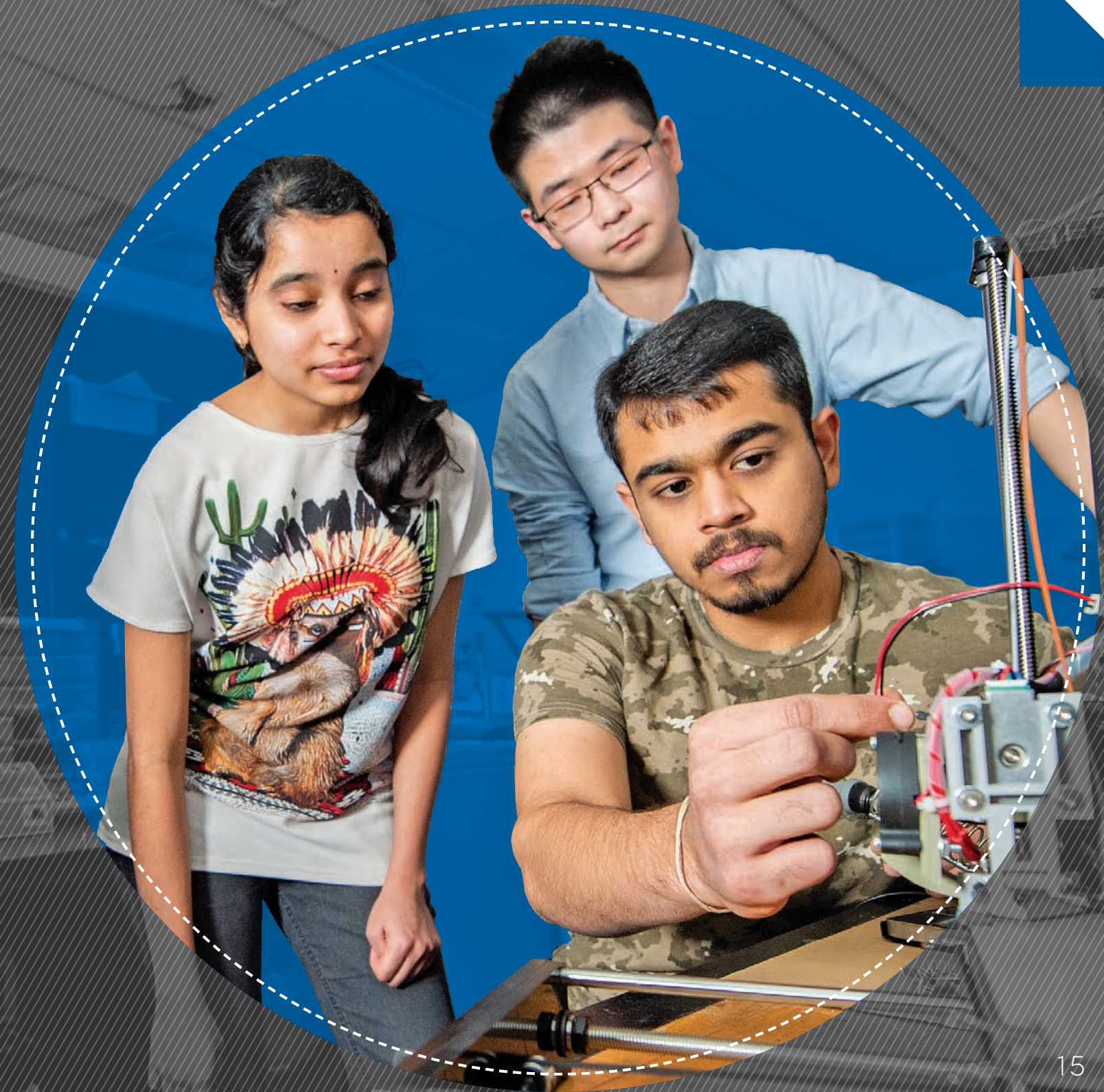




## Here is how we meet our strategic goals.

- 1 Enhance the learning, work and social environments to support the life-long professional goals of students, alumni, staff and faculty.**
- 2 Capitalize on the use of expanded and/or shared research facilities and programs to increase our research footprint nationally and within the university.**
- 3 Strengthen our entrepreneurship and intrapreneurship culture to encourage students and faculty to advance the profession through innovation.**
- 4 Integrate digital education and emerging teaching methods into all aspects of live, blended and distance educational programs.**

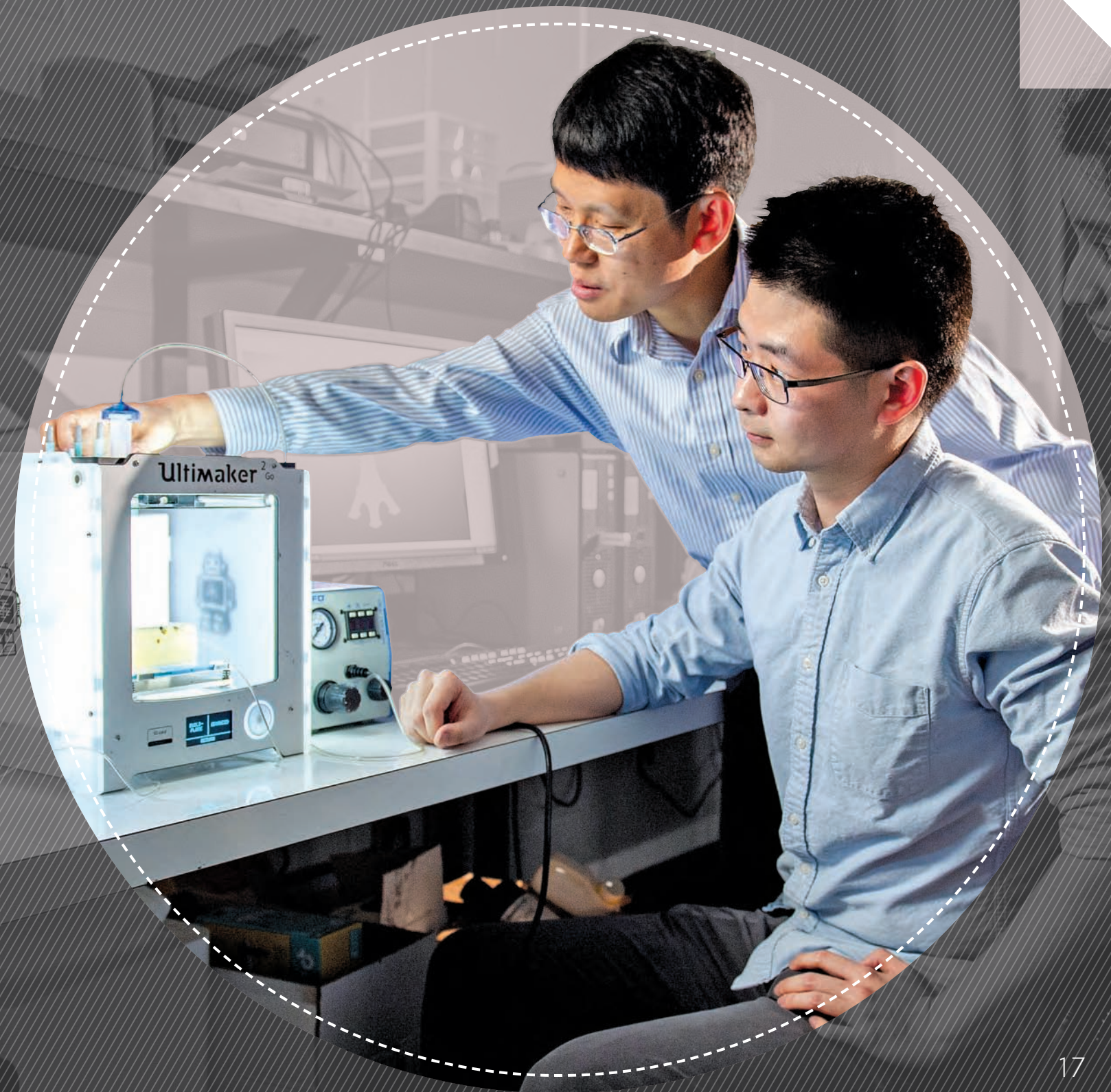
Each of these initiatives addresses one or more of the department strategic goals, and collectively address the first strategic goal: Advancing the department's national ranking and reputation among scholarly peers, prospective students, alumni, industrial partners and the public through innovative research contributions and educational practice.





# 1 Here is how we **enhance the learning, work and social environments** to support the **life-long professional goals** of students, alumni, staff and faculty.

- **We invest** in student learning spaces that enhance collaborative and experiential learning.
- **We provide** high quality experiential learning opportunities for our undergraduate and graduate students.
- **We support** innovative “flipped”, blended and online course activities with digital content.
- **We encourage and support** our graduate and undergraduate students to present research and participate in professional development activities at regional and national conferences.
- **We strategically identify and recruit** students from top engineering programs around the globe into our graduate programs.
- **We acknowledge** the research, teaching, service and leadership accomplishments of our students, alumni, staff and faculty.
- **We encourage our alumni** to participate in advanced degree education, visit us, and engage with our faculty and students via a variety of other ways.
- **We use social media** to engage alumni, students, faculty and staff in professional and social activities.
- **We provide facilities** that encourage faculty, staff and students to collaborate and socialize.
- **We provide mentoring and professional development** programs that benefit faculty and staff.





2 Here is how we **capitalize** on the use of expanded and/or **shared research facilities** and **programs** to increase our **research footprint nationally** and within the university.

- **We lead or co-lead large grants** proposed through the UB Stephen Still Institute for Sustainable Transportation and Logistics, Center for Multisource Information Fusion, Center of Excellence for Global Health Equity and other UB initiatives.
- **We leverage our access** to facilities provided through SEAS and university centers to strengthen research proposals and projects.
- **We lead new efforts** to develop research facilities in drone and autonomous vehicle research and design.
- **We lead and influence** university efforts to build UB infrastructure that supports new product development and process innovation.





**3** Here is how we **strengthen our entrepreneurship and intrapreneurship culture** to encourage students and faculty to **advance the profession through innovation.**

- **We work closely** with different industries on product and process development projects.
- **We provide entrepreneurship opportunities** to graduate and undergraduate students through internships and student design competitions.
- **We encourage and support faculty** to develop and protect intellectual property that is patentable.
- **We encourage our alumni** to develop relationships with faculty and students that result in product and process innovation.





#### 4 Here is how we **integrate digital education** and **emerging teaching methods** into all aspects of **live, blended** and **distance** educational programs.

- **We build infrastructure** to support digital education, virtual meetings and active digital learning.
- **We encourage and support** faculty and students to develop digital course content to enhance the quality of our courses.
- **We take advantage of opportunities** to enhance our courses with digital content to address the learning needs and learning styles of traditional and non-traditional students.
- **We support** different modes of teaching to meet the diverse learning styles of our students.
- **We perform research** to evaluate the educational benefits and limitations of digital and other emerging teaching methods.







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