At the Ira A. Fulton Schools of Engineering, we believe that engineering is more than a discipline—it’s a mind-set, a way of looking at the world to determine how challenges can be met most efficiently, sustainably, safely, and in cost-effective ways that maximize impact and benefit those we serve. Our world-class, diverse faculty and research centers thrive on unconventional thinking and resourceful collaboration, creating innovative solutions while inspiring students on their own paths of discovery.

WE WILL ADVANCE SCIENTIFIC DISCOVERY AND INNOVATION AT SCALE. WE WILL ACCELERATE REAL-WORLD SOLUTIONS FROM CONCEPTION TO IMPACT, ADVANCING THE ECONOMIC, SOCIAL, AND CULTURAL HEALTH OF OUR REGION AND PLANET.

TOGETHER, OUR POTENTIAL IS LIMITLESS
In the Fulton Schools of Engineering, simply put, we build engineers and innovators. The demand for well-prepared engineers, builders, makers, designers, and innovators continues to grow. Our highly regarded graduates are actively recruited by top companies; many go on to pursue graduate studies in medicine, law, engineering, and science; and still others make their mark through service-based experiences, such as the Peace Corps or Teach for America. We give students the individual attention they need to succeed so we can graduate the engineers—and problem solvers—who advance the well-being of our communities, state, and nation.

Our vision of engineering is “the Fulton Difference,” and it encapsulates these principles:

- We think outside the classroom and focus on student success. E2, our innovative program to welcome new freshmen—together with personalized advising, residential communities, engineering tutoring services, and our dedicated career center—is just the beginning of our commitment to student success. We motivate our students to take advantage of the many opportunities available to develop their unique talents for research, curiosity for global understanding, and development of an entrepreneurial mind-set.

- We conduct use-inspired research, taking on the great challenges of our time, advancing fundamental discovery, and addressing engineering challenges over a vast array of critical applications. Our faculty and students understand and value the important impact their research has on the discovery
of solutions and the promotion of the economic, social, and cultural health of our planet.

- **We engage our stakeholders**, corporate partners, alumni, and region in advancing ideas for connecting our engineers across a broad spectrum, through career opportunities for our students to industry-driven projects for our faculty. Our alumni are critical to our success through not only their philanthropic support but also their many contributions to and personal involvement with the advancement of our ideas. The Fulton Schools of Engineering understand, and embrace, our obligation to the economic vitality of our region through the workforce that we develop and train and the research advances of our faculty.

- **We attract faculty dedicated to transforming engineering education and research.** Our faculty embrace change, provide inspiration to our students, and measure the success of their research and professional activities by the impact they have locally and globally.

### OUR DONORS’ IMPACT

The Fulton Schools are tearing down academic silos to forge new disciplines and explore challenges from all perspectives. To do so, our faculty partner with community members, graduate students, undergraduates, clinical partners, corporations—and benefactors like you.

Our 335 faculty members include a Nobel Laureate and members of the prestigious National Academy of Engineering, National Academy of Sciences, National Academy of Inventors, and National Academy of Construction. Their discoveries and agenda better the community and enhance the reputation of Arizona State University, which is beneficial to past and future Sun Devil graduates.

The Fulton Schools’ commitment to research is evident. This academic year, we added two Engineering Research Centers (ERCs), led the Center for Bio-mediated and Bio-inspired Geotechnics (CBBG), and partnered with Rice University on Nanotechnology-Enabled Water Treatment (NEWT) Systems. These additions join our existing ERCs, Quantum Energy and Sustainable Solar Technologies (QESST) and Future Renewable Electric Energy Delivery and Management Systems (FREEDM), led by North Carolina State University. Our research achievements—from life-saving technologies to advances in sustainable construction—are realized in large part by the contributions of our donors and their desires to assist our faculty in tackling grand challenges head on. Through Campaign ASU 2020, you can help the Fulton Schools attract and retain top faculty who will speed innovation and inspire the next generation of engineers.
FACULTY CHAIRS AND PROFESSORSHIPS

In order to keep pace with our rapid student growth, the Fulton Schools of Engineering have hired 178 faculty members in the last five years—a staggering number—bringing our total faculty population to 335 tenured and tenure-track faculty members. Our research productivity and student quality both hinge on our ability to attract, grow, and retain top faculty. Since 2011, we have doubled the number of female faculty, ranking seventh in the country for women in tenured or tenure-track positions, including the first female Fulton Regent’s professor and the lead of a national Engineering Research Center.

The Fulton Schools of Engineering rely on interdisciplinary leaders who will educate and inspire society’s future innovators and produce the research that improves quality of life for all. That means we must provide them with the resources they need to fulfill their immense potential.

Named chairs and professorships improve our recruitment, retention, and recognition of outstanding faculty. By endowing faculty chairs and professorships, deanships, teaching awards, and career awards—all factors that attract and retain the best faculty—we can work together to advance from a nationally recognized engineering school to a global leader in engineering education and research.

At many public research universities, the number of full-time faculty holding endowed posts ranges from 10 percent to 20 percent or higher. At the Fulton Schools, only 7 percent of faculty currently are supported with these positions, and we must triple that number to remain competitive. With 335 current faculty members and 25 to 30 being added each year to keep pace with increases in student enrollment, we seek gifts to support endowed faculty positions, annual professorships, a dean’s chair, and early-stage career support that will make the Fulton Schools more attractive to the world’s finest professors and researchers.

Named professorships are particularly needed in renewable energy, sustainability, climate, rehabilitation robotics, engineering education, manufacturing, cybersecurity, and advanced communications—all areas that are critical to our future and in which the Fulton Schools of Engineering have emerging strengths.

Leading research and innovations that change society:

- The Fulton Schools of Engineering lead national Engineering Research Centers that are focused on Quantum Energy and Sustainable Solar Technologies (QESST) and Bio-inspired and Bio-mediated Geotechnics (CBBG), and we partner on two additional national research centers focused on Nanotechnology-Enabled Water Treatment (NEWT) and Future Renewable Electric Energy Delivery and Management Systems (FREEDM).
- Our research profile includes 8 National Science Foundation (NSF) Industry University Research

178 faculty hired over the past 5 years
“LIKE THE CATALYST IN A CHAIN REACTION, FACULTY SET OFF A CASCADE OF EFFECTS THAT DETERMINE THE QUALITY OF THEIR PROGRAMS, THEIR SCHOOL, THEIR STUDENTS, AND ULTIMATELY THEIR UNIVERSITY. THE MORE ACCOMPLISHED THEY ARE, THE BETTER THE STUDENTS, POSTDOCTORAL FELLOWS, AND FACULTY THEY ATTRACT TO THE FULTON SCHOOLS; THE MORE CREATIVE THEIR COLLABORATIONS; THE MORE SUPPORT THEY RECEIVE; AND THE MORE CONSEQUENTIAL THEIR RESEARCH.”

—Kyle Squires, Dean, Ira A. Fulton Schools of Engineering

Centers (I/UCRC), 2 NSF Integrative Graduate Education and Research Traineeships (IGERTS), 6 Multidisciplinary University Research Initiative (MURI) awards, and 30 young investigator awards from NSF, the Air Force Office of Scientific Research (AFOSR), the Defense Advanced Research Projects Agency (DARPA), the National Aeronautics and Space Administration (NASA), and the National Institutes of Health (NIH).

- We engage globally through the Higher Engineering Education Alliance Program, funded by USAID and industry partners.

- The Fulton Schools posted $99.43M in research expenditures in FY 2016, with expectations to exceed $100M in FY 2017.

- Invention disclosures by faculty have nearly tripled since FY 2010.
Bees, ants, and some birds and fish can act individually but at the same time collectively to achieve a common goal. Robots should be able to do the same thing, reasons Spring Berman, assistant professor of mechanical and aerospace engineering. That will allow them to perform independently in challenging environments where communications could be limited or unreliable, she believes.

“I’m excited to be working in swarm robotics, because it’s a fairly new and highly interdisciplinary field, with many applications ranging from environmental monitoring, exploration, and disaster response to biomedical applications at the micro-nano scale, such as medical imaging and targeted drug delivery,” Berman says. “There’s a great deal of interest in robotics worldwide, and amazing advances are being made in robotic technology that sound like they are science fiction.”

Berman’s research focuses on the modeling, analysis, control, and optimization of multi-robot systems. Her work includes developing robotic technology to perform security surveillance, search and rescue missions, and detection of chemical, biological, and nuclear materials—supported by a recent grant from the Defense Advanced Research Projects Agency, a part of the U.S. Department of Defense.

It’s all done through technically sophisticated control systems for robotic swarms—assemblages of small robotic machines capable of interacting with each other and responding to their surroundings in collaboration to perform complex tasks. Berman is devising swarm-control strategies designed to mimic nature.

Berman’s research on controlling robotic swarms has attracted two grants from the National Science Foundation’s Dynamics, Control, and Systems Diagnostics Program. In addition, online communication platform Robohub recently included her on its list of “25 Women in Robotics You Need to Know About” for her research on robot swarms.
FUEL DISCOVERY, CREATIVITY, AND INNOVATION
$50 MILLION

INNOVATION IN THE RESEARCH LAB
Funding to establish and grow research labs is a critical priority. Despite state-of-the-art research facilities across the Tempe and Polytechnic campuses that advance far-reaching, use-inspired research agendas, every time we add a faculty member, we need additional cutting-edge lab space.

Today, our faculty are working on rehabilitation robots and 3D models that help surgeons plan complicated surgeries, methods of construction that reduce the impact of earthquakes on buildings, and advances in wireless communications—any of which could be one of tomorrow’s life-changing discoveries. Named labs create lasting legacies and are needed to advance the development of new knowledge by world-class researchers.

In addition to research centers and individual faculty labs, each undergraduate program has a corresponding teaching lab. Naming funds and other donations can build and finance state-of-the-art equipment, facilitate collaboration, and, as a result, enable greater productivity among undergraduate and graduate students who are tackling projects that range from aerodynamics to electric circuit design.

$98.3M in research awards during fiscal year 2016
Private investment transformed engineering at ASU in 2003, when Ira A. Fulton’s endowment gift created the Ira A. Fulton Schools of Engineering and propelled us in a direction now known as the Fulton Difference. Subsequent gifts have allowed us to attract top faculty who are recognized around the world for their research.

Attracting and retaining outstanding faculty ensure that top Fulton Schools students will continue to better the world through relevant and use-inspired research in top-ranked programs. Upgrading our research labs provides faculty with the tools they need to engineer successful solutions to the world’s most pressing problems.

There has never been a greater opportunity for you to make a difference. Your generosity can accelerate our hiring and support of key faculty in areas that strategically align with the region’s economic development and with the world’s most pressing challenges. By supporting Campaign ASU 2020, you share your own personal vision for the Ira A. Fulton Schools of Engineering and ensure that the values that have made ASU great continue to guide us for generations to come.

JOIN US IN ADVANCING DISCOVERY

$99.4M in research expenditures during fiscal year 2016
With your generous support, Arizona State University has reinvented the public research university. We are both more inclusive and more accomplished than ever, with ASU students and faculty earning unprecedented levels of recognition for their achievements. Our graduates leave here as master learners who are capable of rising to meet any new and unfamiliar challenge. ASU students, faculty, and graduates also are firmly rooted in their communities and committed to advancing the common good. Together, we have created a model for other universities to follow. Your support during Campaign ASU 2020 will help us break more new ground by raising $1.5 billion to propel our vision for higher education into the next decade and beyond.

**ARIZONA STATE UNIVERSITY** is a comprehensive public research university, measured not by whom we exclude, but rather by whom we include and how they succeed; advancing research and discovery of public value; and assuming fundamental responsibility for the economic, social, cultural, and overall health of the communities it serves.