


**IRA A. FULTON
SCHOOLS OF
ENGINEERING**







WE WILL BE GLOBAL LEADERS IN ENGINEERING EDUCATION, MEASURED NOT BY WHOM WE EXCLUDE BUT BY WHOM WE INCLUDE AND HOW OUR COMMUNITY SUCCEEDS. WE WILL ADVANCE SCIENTIFIC DISCOVERY AND INNOVATION. 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

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. As a part of the largest engineering school in the country, our diverse faculty and students are passionate about finding innovative and entrepreneurial solutions to our most pressing challenges.



A BOLD VISION: “THE FULTON DIFFERENCE”

WE ARE AN ENGINEERING SCHOOL FOCUSED ON STUDENT SUCCESS AND SERVING THE NEEDS OF SOCIETY. WE ACT ON SMART IDEAS THAT WILL TRANSFORM PEOPLE, PLACES, AND THINGS AND THAT WILL BETTER THE WORLD, TODAY AND TOMORROW.

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

**“WE’VE COME A LONG WAY SINCE 2003,
AND WE ARE EXCITED ABOUT WHAT WE SEE AHEAD OF US. THE FULTON
DIFFERENCE HAS ESTABLISHED THE FULTON SCHOOLS OF ENGINEERING
AS A NATIONAL-CLASS ENGINEERING SCHOOL AND REMAINS FOUNDATIONAL
TO OUR EVOLUTION. THE NEXT STEPS IN OUR PROGRESS ARE TO CAPITALIZE ON
OUR NATIONAL LEADERSHIP IN ENGINEERING EDUCATION AND RESEARCH TO
ACHIEVE GLOBAL LEADERSHIP AND INNOVATION AT SCALE.”**

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

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 faculty 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.

OUR DONORS' IMPACT

Philanthropic support is what makes the Fulton Difference possible. Your support leads to innovations in the science and engineering of new energy sources that provide clean, renewable power; advances in the design and development of materials needed for lighter, more energy-efficient transportation systems and resilient, sustainable civil infrastructure; wearable robotic devices for rehabilitation of stroke patients; and new technologies that are crucial to affordable health care, among other areas. By supporting the Ira A. Fulton Schools of Engineering, our students, faculty, research, and programs, you can help build a better future for everyone.



TOTAL GOAL: **\$150 MILLION**

ENSURE STUDENT ACCESS AND CHAMPION STUDENT SUCCESS **\$40 MILLION**

Our knowledge-based economy depends on well-educated and highly trained engineering professionals who will maintain our country's competitive edge and will be the key to evolving the nation's economy. Ranked as the most innovative university in the country by *U.S. News & World Report* two years in a row, ASU and the Fulton Schools of Engineering are working to build a robust pipeline of professionals through advances in education platforms. We champion the philosophy of “engineers from day one”—starting with E2, our interactive orientation for freshmen students prior to the start of school. We provide support through a culture of peer mentoring, direct faculty engagement, and undergraduate teaching

assistants. We boost hands-on learning through freshman-dedicated instructors, innovative learning spaces, and undergraduate research experiences, tackling real-world problems with faculty, industry, nonprofits, and alumni.

As we have grown to become the largest engineering school in the country, with just over 20,000 students in the fall of 2016, our focus on students has led to a freshman retention rate nearing 90 percent and a job placement rate of 87 percent upon graduation. Our students make up 30 percent of Barrett, The Honors College, and include 126 National Hispanic Scholars, 4,153 women, 3,110 Hispanics, 624 African Americans, and 184 American Indians in 2015–16.

STUDENT SCHOLARSHIPS

In 2015–16, more than 4,590 students—nearly one-third of the total student population in the Fulton Schools of Engineering—qualified for federal Pell Grants, meaning they came from families who earn less than \$50,000 annually. Together with private, state, and federal support, the University invested \$21.7M to assist and advance these students to graduation, where on average they will earn \$60,000 with an undergraduate degree, \$75,000 with a master's degree, and \$90,000 with a PhD. With our student enrollment tripling since 2003, the number of applications for need-based and merit-based scholarships continues to increase. Unfortunately, a university education is out of the financial reach of some families. Funding for scholarships enables the Fulton Schools of Engineering not only to attract the best students but also to make it possible for thousands of students to achieve their goal of graduating. Our goal is to raise \$15 million for scholarships during Campaign ASU 2020 to continue building a diverse population of bright, innovative students, advancing the pipeline of engineering talent and their engineering solutions for our region, the U.S., and the world.

GRADUATE FELLOWSHIPS

In order to attract outstanding graduate students, we must see an increase in fellowships. Private support is paramount as we compete for the best students against schools that offer first-year or even multiple-year fellowships. Our ability to recruit passionate, innovative graduate students is directly linked to endowed fellowship support. With roughly 200 new doctoral students enrolled annually in the Fulton Schools, we need to raise \$10 million to draw the best and brightest graduate students to advance our goals in research, education, and ranking.

ADVANCING STUDENT COMPETITIVENESS

We need to expand undergraduate exploration beyond the classroom and the academic major, including providing stable funding for students to attend competitions and conferences. To support this effort, we seek a \$1-million endowed fund for each of our six Schools to allow students to present at conferences and successfully participate in—and win—national competitions.

In the past year alone, graduate and undergraduate students have earned top awards at conferences, including a top-10 poster award at the American Association for Cancer Research (AACR) Annual Meeting and a “best student research paper” award at the American Society of Mechanical Engineers (ASME) Power and Energy Conference. Attendance and presentations at such events not only enhance the confidence, experience, and professional network of students but also raise the profile of the Fulton Schools as a leader in cutting-edge research, innovation, and engineering education.

Outside the classroom, the Fulton Schools boast more than 60 student organizations and teams that enable students to accomplish impressive feats while building leadership skills and traveling to events to cultivate relationships essential for their professional development. Funding to support student organizations helps students gain the hands-on experience, leadership qualities, and technical skills desired by employers—students who are better poised to tackle and solve societal problems as the next generation of engineers.

20,336

fall 2016 student enrollment

UNDERGRADUATE RESEARCH CATALYST

Thanks to programs like the Fulton Undergraduate Research Initiative (FURI), eProjects, and senior design capstone courses, more than 1,000 Fulton Schools undergraduate students are conducting research, long before they would at many peer institutions. These programs are funded partially or completely by private gifts and industry support.

This strong expansion into undergraduate research started with Ira A. Fulton's vision for FURI, now a signature component of the Fulton Difference. Funding for this initiative helps attract top student talent to ASU and builds translational experiences for students, giving them the opportunity to apply classroom learning to current research and industry issues. These

experiences often come at critical moments for students as they think about moving on to industry or pursuing graduate studies and research careers. In 2016 alone, research experience was a key factor in three engineering students' being named to the prestigious national Barry Goldwater Scholarship and Excellence in Education program.

Although endowed funds provided more than \$200,000 last year to support 265 student research projects, the rapid growth of the Fulton Schools has outpaced our ability to support the enormous interest in this sought-after program. Our goal is to make it possible for all students who want to participate in undergraduate research to have that chance, expanding FURI and undergraduate research opportunities with endowed funds of \$9 million to allow an additional 360 students to participate each year.





IRA A. FULTON INVESTING FOR THE FUTURE

Chairman, Fulton Homes Inc.

Ira A. Fulton is the self-made homebuilder whose endowment gift created the Ira A. Fulton Schools of Engineering and sparked the Fulton Difference. He's also the man who makes a point of attending campus events, meeting students, and asking about their studies and research.

“The biggest thing I enjoy is my engineering students,” he says. “To come on campus and tell them how much I appreciate them—I enjoy doing it. I want them to know that I was there once.”

Born in Tempe, Fulton grew up defining his own work ethic. At age 6, he became a dishwasher in his mother's café. He acquired his first “real” job as a newspaper courier at age 11, eventually becoming the number-one carrier for the *Arizona Republic*.

After attending Arizona State University on a football scholarship, he became National Salesman of the Year for National Cash Register and then formed his own companies—he has built retail outlets, wholesale buying groups, and numerous other businesses, culminating in Tempe-based Fulton Homes.

As a leading national philanthropist, when Fulton set out to become an agent of change in education and the Phoenix community, he found an equally dedicated partner in Arizona State University. Thanks to Fulton's investment, the Ira A. Fulton Schools of Engineering have been able to advance disciplines, create innovative programs, and build enrollment.

“I am so proud to be involved with Michael Crow and the New American University, what he's trying to accomplish, and where we're going,” Fulton says.





ELEVATE THE ACADEMIC ENTERPRISE *\$60 MILLION*

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.



178

faculty hired
in 5 years



FUEL DISCOVERY, CREATIVITY, AND INNOVATION \$50 MILLION

INNOVATION IN THE RESEARCH LAB

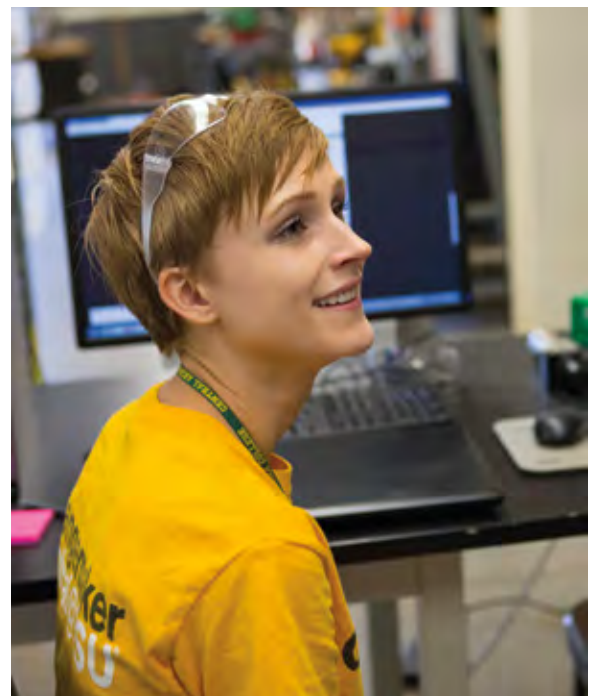
Funding to establish and grow research labs is a critical priority. Despite state-of-the-art research facilities across the Tempe and Polytechnic campuses that advance far-reaching, use-inspired research agendas, every time we add a faculty member, we need additional cutting-edge lab space.

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 corresponding teaching labs. 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.

Our goal is to raise \$10 million to advance faculty and students with state-of-the-art research equipment labs and facilities.





SPEEDING TECHNOLOGY TRANSFER

Advances in high-tech and innovation industries stimulate the regional economy through technology advancements and job creation. Together with industry, government, and other strategic partners, the Fulton Schools are working to accelerate the transformation of the Greater Phoenix economy into a global force for innovation and technology by quickly translating scientific discovery into the marketplace. In order to raise the region's profile and reputation as a leading technology innovator, the Fulton Schools of Engineering will establish Innovation Collaboratories focused on areas of research excellence and industry strength, enabling the Fulton Schools to scale their research enterprise. These interdisciplinary collaboratories will foster advanced manufacturing, STEM education, cybersecurity, advanced communication, rehabilitation and robotics, renewable energy, and sustainability.

Accordingly, the collaboratories will serve as a use-inspired research and technology development model that will:

- Capitalize on the Fulton Schools' talent-rich faculty and student body to innovate at scale.

- Focus on research initiatives that represent areas of strength and opportunity for the region.
- Accelerate the pace of knowledge creation and invention in critical areas.
- Expand capacity to produce discoveries of fundamental value.
- Build a highly skilled workforce tailor-made for local industry.
- Create a technology incubator that will shorten the lead time required to take technology from development to the marketplace through promotion of licensing, patent application, and start-up nurturing.
- Provide early-stage seed funding for qualified projects, ensuring that technologies with a potential for high impact safely transition to the marketplace.

Our goal is to raise \$25 million to advance these transformational partnerships and areas of expertise to broaden our research enterprise, creating an unparalleled economic engine for the state and the region.

SPARKING STUDENT ENTREPRENEURSHIP

The game-changing entrepreneurial efforts of our students are seeded within the Fulton Schools of Engineering from freshman year through graduation and include such programs as Engineering Projects in Community Service (EPICS), the eSeed Challenge, FSE 100 Introduction to Engineering labs, the Grand Challenge Scholars Program, the Polytechnic School's Technological Entrepreneurship and Management program, and applied learning/project courses and capstone classes—all of which depend on external funding support.

1,000

More than 1,000 undergraduate students participate in research annually.

Students envision the innovative solutions, but support programs provide the education, skills, experience, and entrepreneurial mind-set needed for them to succeed. As a part of our commitment to student success, we recently launched the Fulton Schools Startup Center to empower all undergraduate and graduate students to advance their entrepreneurial ideas. With endowed funds of \$10 million for our entrepreneurial programs, the Fulton Schools can reach the university's goal of having 10 percent of engineering students engaged in entrepreneurial efforts.

Beyond programmatic investment, the Fulton Schools partner with private donors to provide seed funding to advance student solutions and entrepreneurial activities. In just one example, a donor has invested annual seed funding of \$100,000, with funds going directly toward student companies. With endowed funds of \$5 million, donors have the opportunity to support the center's annual needs for advancing student entrepreneurs and their ideas.

ENGINEERING SMILES



For millions, dental care is an unattainable luxury. Six ASU students spent three years designing, building, and delivering a mobile dental clinic for use in developing countries as well as in underserved Native American communities. The project, which started in Engineering Projects in Community Service (EPICS), took the students from Phoenix to El Salvador and pushed them outside their comfort zones. "Their persistence through adversity, commitment to delivering, and desire to make a difference have been incredible to watch," says Scott Shrake, EPICS director. "The team has learned so much about what it takes to be real engineers and change makers."



JOIN US IN ENGINEERING THE FUTURE

Private investment transformed engineering at ASU in 2003, when Ira A. Fulton's endowment gift created the Ira A. Fulton Schools of Engineering. Our culture now centers on the Fulton Difference—"engineers from day one," with a focus on innovative engineering education, a world-class faculty, and solutions-based research. Partnerships with donors, industry, and foundations have allowed us to become the largest engineering school in the country, attracting more bright, creative students from diverse backgrounds to launch their engineering careers at the Fulton Schools.

By supporting scholarships, professors, and programs for engineering students, you are investing in the Fulton Schools at a fundamental level. Your gift can directly change lives—and inspire our students and faculty to shape the future for all of us.

There has never been a greater opportunity for you to make a difference. Your generosity can provide the best education possible to the most promising engineering students from Arizona, America, and the world. 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.



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.

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