

UNIVERSITY OF MARYLAND
A. JAMES CLARK SCHOOL OF ENGINEERING

2020 Strategic Plan

INTRODUCTION

The A. James Clark School of Engineering at the University of Maryland serves as the catalyst for high-quality research, innovation, and learning, delivering on a promise that all graduates will leave ready to impact the Grand Challenges (Energy, Environment, Security, and Human Health) of the 21st century.

In 2014, the Clark School embarked on a strategic planning process to continue our pursuit of academic excellence and our goal to be an eminent college of engineering. The process included input from all constituencies including representatives from each department, program, and unit, as well as alumni and members of the Clark School board of visitors.

Four pillars emerged and stand as our fundamental principles:

- Develop Fearless Engineers who will impact the Grand Challenges and other societal problems of the 21st century.
- Lead and transform the engineering discipline and the profession.
- Accelerate innovation and entrepreneurship.
- Build a culture of impact among Clark School faculty, staff, students, alumni, donors, friends, and the local, state, national, and international community.

These pillars elevate and support the Clark School as it leads the engineering discipline toward the future. Together with crosscutting enablers—human capital, infrastructure, and continued development—our enterprise is strong.

The 2020 plan features exciting new initiatives and big ideas, balanced with careful attention to creating value for our local community, state, and nation. We are particularly proud of the Clark School Promise, which comprises our vision for the unique experience students receive while at the Clark School.

My thanks to everyone who has participated in crafting this plan and to all of you who are vital to the success and continued growth of the Clark School.

This plan is a living, growing, evolving document. We encourage you to review it and join us in making it a reality in the years to come.



Darryll J. Pines
FARVARDIN PROFESSOR AND DEAN
A. JAMES CLARK SCHOOL OF ENGINEERING



WHAT IS MPACT?

ENGINEERS HAVE THE UNIQUE CAPABILITY TO INNOVATE AND DESIGN NOVEL PRODUCTS AND FIND SOLUTIONS THAT CAN IMPROVE MILLIONS OF LIVES. AT THE CLARK SCHOOL WE PLACE A SPECIAL EMPHASIS ON TRANSFORMING FEARLESS IDEAS INTO NEW INNOVATIONS THAT BENEFIT MILLIONS. THIS IS WHAT WE CALL "MPACT."

PILLARS AND GOALS

1 | Develop Fearless Engineers who will Mpack the Grand Challenges and other societal problems of the 21st century.

- Deliver on the A. James Clark School of Engineering Promise. Every student will have the opportunity for Mpack through hands-on experiences, mentorship, and participation in challenging cocurricular, extracurricular, research, and service-learning initiatives in an inclusive environment.
- Attract a diverse pool of the best students at both the graduate and undergraduate levels.
- Invest in the engineering pipeline by establishing strategic partnerships, developing K-14 programs, and contributing to the national discussion on K-14 engineering education policy.
- Retain and graduate a diverse pool of students at the undergraduate and graduate levels.
- Sustain outstanding accomplishments among students, including prestigious career placements upon graduation.
- Decrease time to degree completion, increase graduation rates of undergraduate and graduate students.

2020 UNDERGRADUATE DIVERSITY GOALS:

- Female enrollment: 30%
- Under-represented racial/ethnic minority student enrollment: 20%

2020 UNDERGRADUATE RETENTION GOALS*:

- Student retention after 1 year: 92%
- Student retention after 4 years: 65%
- Student graduation after 5 years: 75%

* In the first two years, 5-10% of undergraduates change majors, but stay at UMD.

The
Clark School
Promise:
Every student
will have the
opportunity
for Mpack.



UNDERGRADUATE ENGINEERING MAJOR
AT U.S. ARMY RESEARCH LABORATORY



THE CLARK SCHOOL
WILL CULTIVATE FEARLESS
ENGINEERS THROUGH
HANDS-ON EXPERIENCES.

PILLARS AND GOALS CONT.

2 | Lead and transform the engineering discipline and the profession.

- Showcase Clark School faculty as thought-leaders on national and international topics that affect society in the 21st century.
- Develop new infrastructure and renovate existing infrastructure to adapt to the needs of engineering education and emerging research areas.
- Enable transformative research innovation and success.
- Expand interdisciplinary research, educational, and entrepreneurial collaborations.
- Increase partnerships with government agencies, foundations, corporations, educational institutions, STEM organizations, and associations.
- Transform the classroom with the latest engineering education pedagogy, unique infrastructure, and e-learning technology.

3 | Accelerate innovation and entrepreneurship.

- Foster a culture where innovation and creativity is encouraged, incentivized, and rewarded.
- Encourage students and faculty to commercialize novel technologies to enhance economic development for the state and nation.
- Embrace social entrepreneurship.
- Build intrapreneurial skills among students and faculty.



BITCAMP HACKATHON



THE NEUTRAL BUOYANCY RESEARCH FACILITY



ENGINEERS WITHOUT BORDERS



CHEM-E CAR COMPETITION



TERPS RACING



GAMERA HUMAN-POWERED HELICOPTER

EACH YEAR, CLARK SCHOOL STUDENTS COMPETE IN DOZENS OF COMPETITIONS AND CHALLENGES.

The Clark School will foster a culture where innovation and creativity is encouraged, incentivized, and rewarded.



PILLARS AND GOALS CONT.

4 Build a culture of M_{pact} among Clark School faculty, staff, students, alumni, donors, friends, and the local, state, national, and international community.

- Link research and learning activities to societal impact.
- Drawing from our unique location in the D.C. metro area, engage in the national dialogue on the grand engineering challenges and solutions of the 21st century.
- Create and demonstrate the value of engineering education, research, and service on economic development at the campus, local, state, national, and global levels.
- Engage a loyal community of alumni and friends who actively invest their resources in ensuring the success of the Clark School.



NEW FACILITIES



DISTINGUISHED ALUMNI



CREATIVE GRADUATES

STRATEGIC RESEARCH THEMES

- Additive and Advanced Manufacturing
- Autonomy and Robotics
- Bioengineering, Biomedical Devices, and Health Sciences
- Cybersecurity, Data Sciences and Analytics
- Transportation, Infrastructure Renewal, and Disaster Resilience
- Energy and Sustainability
- Quantum Optics, Communication and Computing
- Virtual and Augmented Reality

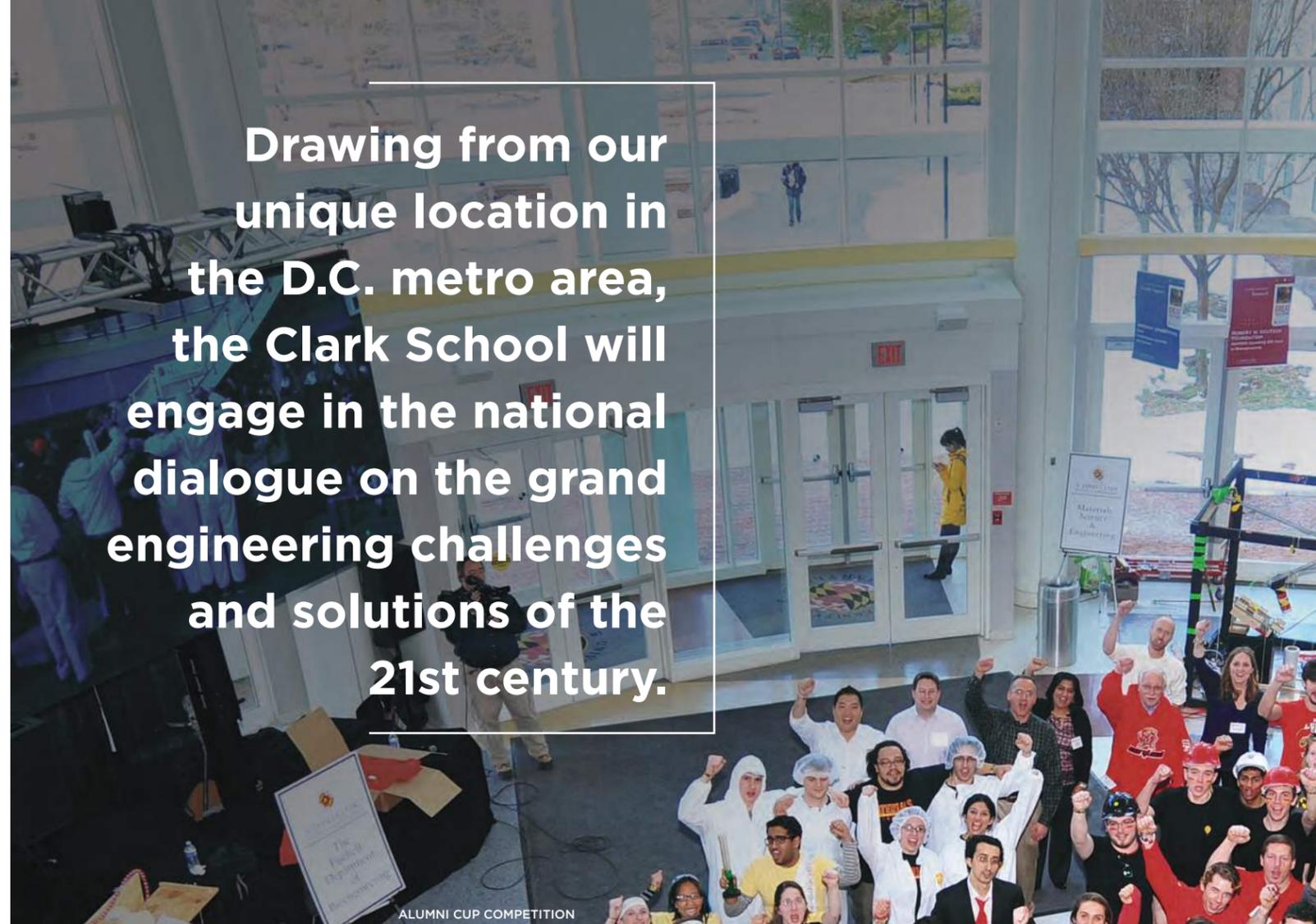


TISSUE ENGINEERING



THE CLARK SCHOOL WILL PROVIDE OPPORTUNITIES FOR ENHANCED LEARNING TO MEET SPECIFIC NEEDS AND DEVELOP UNIQUE SKILLS FOR TODAY'S RESEARCH AND TOMORROW'S WORKFORCE.

Drawing from our unique location in the D.C. metro area, the Clark School will engage in the national dialogue on the grand engineering challenges and solutions of the 21st century.



ALUMNI CUP COMPETITION

2020 INITIATIVES

1| Fulfill the A. James Clark School of Engineering Promise

Every student will have the opportunity for Mpack through hands-on experiences, mentorship, and participation in challenging cocurricular, extracurricular, research, and service-learning initiatives in an inclusive environment.

2| Cultivate Diversity

Recruit and retain more women and underrepresented undergraduate populations than ever before, with a goal of 30 percent for women and 20 percent for minorities by 2020.

3| Launch the Fearless Frontiers Research Initiatives

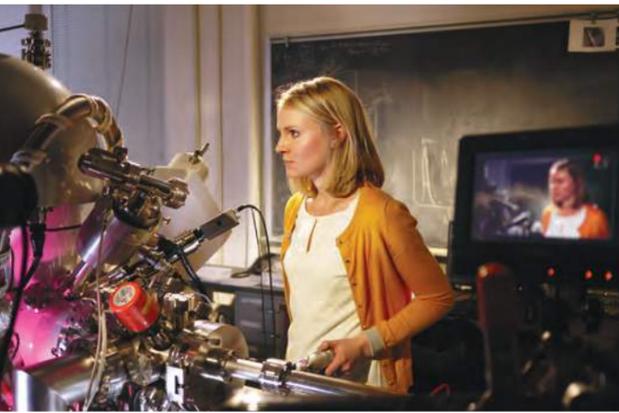
Increase the number of graduate fellowships, postdoctoral opportunities, named chairs and professorships, and strategic public-private partnerships, enabling faculty, staff, and students to work on strategic research frontiers and society's grand engineering challenges.

4| Enhance learning, teaching, and research with new and compelling technologies.

Provide opportunities for enhanced learning to meet specific needs and develop unique skills for today's research and tomorrow's workforce.

5| Build an open and creative environment that cultivates economic growth and development.

Provide a creative and innovative environment that fosters fearless ideas and enables Clark School students, staff, and faculty to work on society's most challenging problems in energy, healthcare, and security and that enhances economic development for the local community, state of Maryland, and the nation.



LEADING RESEARCH



CORPORATE PARTNERS



STUDENT STARTUPS



A. JAMES CLARK HALL, PICTURED RIGHT, WILL BE AN ICONIC BUILDING FOR THE CLARK SCHOOL OF ENGINEERING AND THE ENTIRE UNIVERSITY. CLARK HALL WILL ACCOMMODATE RAPIDLY GROWING PROGRAMS AND IMPROVE CLASS SPACE AVAILABILITY, WHILE ENCOURAGING INTERDISCIPLINARY COLLABORATION AND GROWTH FROM ELECTRICAL AND MECHANICAL ENGINEERING TO BIOLOGY AND INFORMATION TECHNOLOGY. FORTY-THOUSAND SQUARE FEET OF CLARK HALL'S SPACE WILL BE DEDICATED TO COLLABORATIVE INSTRUCTIONAL AND RESEARCH SPACE. THREE FLOORS WILL BE DEVOTED TO THE ROBERT E. FISHELL INSTITUTE FOR BIOMEDICAL DEVICES AND THE FISHELL DEPARTMENT OF BIOENGINEERING, HOME TO THE UNIVERSITY OF MARYLAND'S FASTEST GROWING UNDERGRADUATE DEGREE PROGRAM.



A. JAMES CLARK
SCHOOL OF ENGINEERING



SOLAR DECATHLON
WATERSHED TEAM



CLARK SCHOLARS



WOOD STOVE DESIGN
CHALLENGE: TEAM MULCIBER



TESTUDO WITH GRADUATE AND
FUTURE GRADUATE



CLARK SCHOOL
STAFF AWARDS



SIKORSKY LEADERSHIP
VISIT TO TEAM GAMERA



STEEL BRIDGE TEAM



ALUMNI CUP



NASA ASTRONAUT AND
ALUMNA JEANETTE EPPS



WOMEN IN ENGINEERING
GRADUATES



JEONG H. KIM
ENGINEERING BUILDING



A. JAMES CLARK
SCHOOL OF ENGINEERING

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