

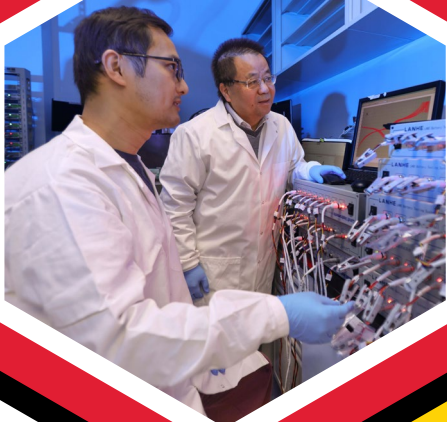


A. JAMES CLARK
SCHOOL OF ENGINEERING

STRATEGIC PLAN >>>>

2024—2030

WE INNOVATE FOR THE PUBLIC GOOD



A MESSAGE

FROM THE CLARK SCHOOL

We present the **A. James Clark School of Engineering Strategic Plan**—developed for our community, by our community—to guide and propel our School to 2030 and beyond.

The world is rapidly evolving and faces many challenges as we look to 2030, including:

- Mitigating and adapting to climate change
- Rebuilding our aging infrastructure
- Transitioning to more sustainable energy sources
- Ensuring the ethical use of artificial intelligence and machine learning
- Improving food security and our water resources
- Improving healthcare in a time of pressing global health issues
- Securing our supply chain and the ability to manufacture numerous products
- Ensuring that we provide fair access to engineering education for our citizens

Solutions to these problems will require cutting-edge engineering and innovation that promote a more equitable and inclusive world for all.

The Clark School is well positioned to develop solutions to these problems and continue to lead advancement of engineering knowledge and innovation within our communities, our state, our nation, and beyond. As one of the country's top engineering schools, we possess expertise in a breadth of engineering disciplines, backed by a diversity of talented people, minds, and perspectives. Our strong and passionate community is **bound together by a shared mission and capable of tackling societal grand challenges** that transcend a single discipline. Coupled with our location close to the nation's capital, we have the opportunity to magnify our impact through unique partnerships with an array of federal, corporate, and community organizations.



Dean Samuel Graham, Jr.





Critically, the Clark School is adaptable in the reality of our changing world. We are reimagining how we can harness education, research, innovation, and entrepreneurship to create solutions that our world needs. We **promote a diverse and inclusive community** with the resources and skills to address the challenges we see today and define what is next for our tomorrow. We are dedicated to maintaining an ecosystem of engineering innovation that can predict and adapt to the latest challenges. And we are committed to working with the state of Maryland, the nation, and the world to develop technologies that truly matter as we educate the leaders that will help improve our global society.

This strategic plan will guide the Clark School community in the coming years, focus our efforts on our key strategic priorities, help demonstrate our continuing commitment to excellence, and ensure we support the University of Maryland's mission and the goals in the Fearlessly Forward strategic plan.

As we ourselves move fearlessly forward into the future, **the Clark School will Innovate for the Public Good**: we will continue our mission to teach and shape the best engineers; research, discover, and advance the science of engineering; empower a strong, inclusive Clark School community; and promote partnerships that amplify our impact.





WE INNOVATE FOR THE PUBLIC GOOD



THE CLARK SCHOOL COMMUNITY

The Clark School includes more than 6,400 faculty, staff, and students, as well as more than 50,000 alumni. Each member of our community contributes a **unique and valuable perspective**, promoting a rich diversity of expertise, experience, thought, and viewpoints. As the Clark School, we are united by a common mission and **empowered by shared values** that accelerate us to our vision of the future.

This plan uses the term “the Clark School community” or “the community” to mean the Clark School’s **students, staff, faculty, and alumni**—the people who work, teach, learn, mentor, research, innovate, build, and thrive within the School. This community and its actions are the source of the Clark School’s strength; together they are responsible for the School’s greatness and excellence. This plan reflects the community’s accomplishments and demonstrates how, together, the Clark School community will continue to excel and serve the people of the state of Maryland and beyond.

ENGAGEMENT IN THE STRATEGIC PLANNING PROCESS

This strategic plan was built by the people of the Clark School. It represents more than a year of collaborative effort and incorporates input from students, staff, faculty, the Board of Visitors, and other Clark School community members. The Clark School’s leadership developed the framework for this plan while the broader community helped refine the plan and add detail. This included a Clark School-wide strategic planning survey, four town halls that sought input from the School’s most critical stakeholders, and a strategic planning workshop that refined the plan and built consensus.



OUR VISION



The Clark School community—our students, staff, faculty, and alumni—**will lead the development of engineering innovations and the delivery of inclusive engineering solutions** that promote a more equitable, sustainable, and vibrant future for all in the state of Maryland and beyond.

OUR VALUES



There are several foundational values that remain true in all that we work to accomplish in the Clark School. These values will help to guide and direct our decisions, no matter how hard they are to make.

- ▶ EXCELLENCE
- ▶ PURPOSE
- ▶ DIVERSITY AND INCLUSION
- ▶ INNOVATION AND ENTREPRENEURSHIP
- ▶ COLLABORATION
- ▶ LEADERSHIP
- ▶ COMMUNITY
- ▶ SOCIAL RESPONSIBILITY
- ▶ WELL-BEING
- ▶ MULTIDISCIPLINARY THINKING

OUR MISSION



The A. James Clark School of Engineering **drives and sustains an ecosystem of education, research, innovation, and entrepreneurship** that advances the frontiers of science, develops the next generation of engineers, and collaboratively creates grand engineering solutions that improve our society for all.

STRATEGIC PRIORITIES



Reimagine How We Teach to Enhance Learning



Accelerate Research, Discovery, Innovation, and Impact



Empower the Clark School Community



Build Partnerships to Enhance Our Impact

STRATEGIC PRIORITY 1

REIMAGINE HOW WE TEACH TO ENHANCE LEARNING

The Clark School's educational mission is to **prepare our students for careers in engineering—and beyond—while training them to address the challenges of today and define the challenges of tomorrow.**

As the problems our students face become more complex and interdisciplinary, we must reimagine how we prepare them. Our students will learn to use their foundational knowledge from the classroom to innovate solutions to societal challenges and translate them to real-world applications.



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The Clark School will innovate in education to advance the public good and keep pace with ever-changing societal challenges. We will continue to evolve our courses and learning spaces to enhance student engagement across disciplines and create meaningful partnerships for our students to learn outside of the classroom through extensive experiential learning programs. Moreover, these learning opportunities will be inclusive of disciplines outside of engineering to allow our students and their teams to address the full complexity of challenges they will face in their careers. We want our students **to examine the distinctive aspects of engineering within the context of a true multidisciplinary approach to provide a better solution for all.**

OBJECTIVES

- **REINFORCE** links between the classroom and the real world.
- **ENGAGE** students through innovative teaching and collaboration in inclusive and accessible learning environments.
- **PROMOTE** multidisciplinary interactions and education to prepare students to ethically solve society's grand challenges.
- **LEVERAGE** the unique ecosystem of the national capital region to help prepare students through experiential learning and entrepreneurial activities.
- **LEAD** in developing workforce educational activities in emerging fields that are of importance to the nation.



As a leader in engineering education, the Clark School offers a wide variety of **degree programs** to prepare our students for the future.

- Aerospace Engineering
- Biocomputational Engineering
- Bioengineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Cyber-Physical Systems Engineering
- Electrical Engineering
- Fire Protection Engineering
- Materials Science and Engineering
- Mechanical Engineering
- Mechatronics Engineering

For more information:
<https://eng.umd.edu/degree-programs>

INITIATIVES

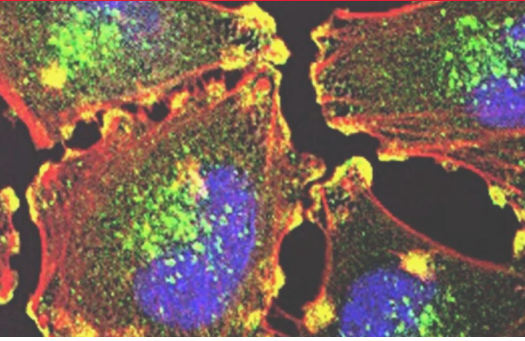
- ▶ **DEVELOP industry-government-university partnerships** to bring real-world and use-inspired challenges to the classroom.
- ▶ **CREATE vertically integrated project teams** to provide multi-year projects for experiential learning, allowing students to learn through activities they are passionate about.
- ▶ **EVOLVE the curriculum and pedagogical methods to** ensure flexibility and leverage opportunities for interdisciplinary engagement, including those in areas outside of engineering.
- ▶ **ENHANCE our online and applied graduate engineering program** to be responsive to emerging needs in workforce development.
- ▶ **IMPROVE research opportunities for all students** and introduce research cohorts and lab rotational programs to expose students to research from year one.
- ▶ **LEVERAGE emerging artificial intelligence technologies, immersive and mixed reality, and data analytics** to improve the student learning experience and generate success within engineering.

STRATEGIC PRIORITY 2

ACCELERATE RESEARCH, DISCOVERY, INNOVATION, AND IMPACT

The Clark School will innovate in research to serve the public good. We will act **as a leading catalyst for high-quality research** that generates new discoveries, technologies, and innovations that yield significant positive impacts across all facets of society. By supporting and nurturing a creative, inclusive, and interdisciplinary environment that **fosters innovative ideas at the forefront of science and engineering**, Clark School researchers will define and advance new solutions to society's most pressing challenges to meet our shared needs and enhance economic development regionally, nationally, and globally.





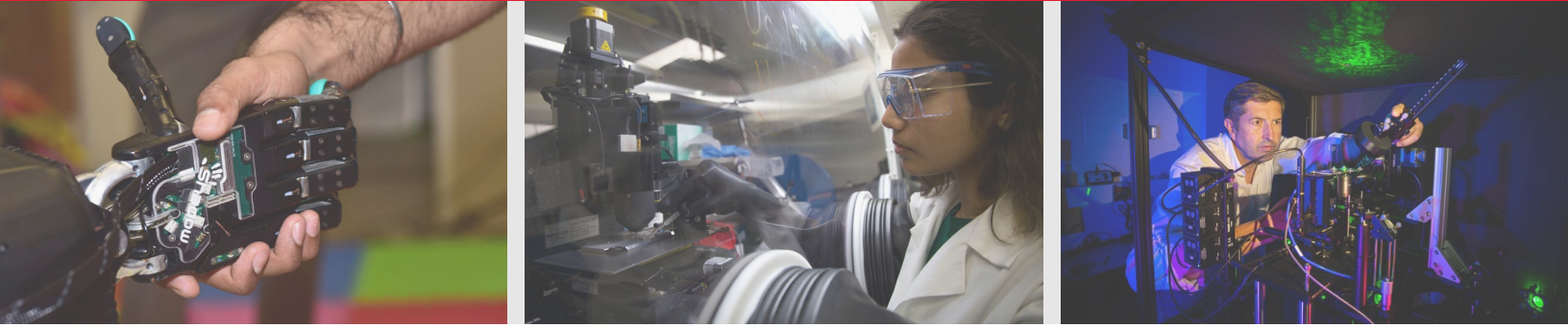
OBJECTIVES

- **FOSTER a thriving research community** by supporting the growth of collaborations across disciplines.
- **ENHANCE the utilization and sharing** of space and infrastructure across the Clark School.
- **INVEST in human resources** enabling the pursuit of transformative ideas and innovation at the forefront of science and engineering.
- **EXPAND and facilitate** technology translation.
- **LEVERAGE the rich federal ecosystem** of the region to address emerging research areas.
- **ENHANCE communication** of Clark School research that is positively impacting society.



As we look to 2030, the Clark School will **prioritize research** in the following areas to accelerate our discovery, innovation, and impact:

- Quantum Engineering
- Artificial Intelligence
- Engineering and Medicine
- Robotics and Autonomy
- Energy and Sustainability
- Climate Change
- Transportation and Critical Infrastructure
- Semiconductors and Manufacturing
- Space Systems



INITIATIVES

- **FOSTER communication and a collaborative culture among research units and disciplines** by using shared spaces designed to promote intellectual and social interactions.
- **INVEST strategically in new core laboratory infrastructure and technical staff** for thematic research initiatives accessible to researchers across the Clark School and the University.
- **INCREASE fellowship opportunities** that strengthen the doctoral student pipeline by improving the recruitment of top students and incentivizing excellence among graduate students and their faculty advisors.
- **ESTABLISH liaisons to government and industry** to grow external research collaborations and facilitate technology transfer.
- **STRENGTHEN the Clark School's role** in supporting and fostering technology transfer and idea incubation while reducing barriers to entrepreneurship.
- **EXPAND opportunities and implement new mechanisms** for sharing our research activities and accomplishments with internal and external stakeholders.

STRATEGIC PRIORITY 3

EMPOWER THE CLARK SCHOOL COMMUNITY

The strength of the Clark School relies on having **a vibrant and diverse community of students, faculty, staff, and alumni that share a passion for learning, innovation, research, and societal impact**—a community where every member realizes their full potential while demonstrating inclusive excellence. We will foster a shared vision of excellence in all that we do; support and empower all community members to reach academic and professional excellence; and provide an environment that is safe and open, allowing everyone to take risks and celebrate successes. We will ensure and support the well-being of our community while pursuing new investments to foster engagement and inclusion. As we move toward 2030, we will challenge ourselves to become a model of inclusive excellence for the University of Maryland so that all may innovate to serve the public good.



▶ STRATEGIC PRIORITY 3: Empower The Clark School Community



OBJECTIVES

- ▶ **RECRUIT and support** a highly diverse student body, faculty, and staff from all sectors of society.
- ▶ **INTEGRATE** the values of an inclusive **community** where every individual throughout the Clark School has a voice and is treated with respect.
- ▶ **FOSTER** a **community of care** to support the mental health and well-being of every member of the Clark School.
- ▶ **RECOGNIZE and celebrate** the variety of contributions and services provided by our staff, faculty, and students.
- ▶ **ALIGN** **evaluations, rewards, and incentives** with our goals and values to support the professional and academic development of our community.
- ▶ **EMBRACE** a **culture** of collaboration, openness, and transparency within our community.



INITIATIVES

- ▶ **INVEST** in student groups, organizations, and programming to foster a strong academic community from day one, living up to the principles of Terrapin Strong.
- ▶ **COLLABORATE** with other groups on campus to create programs to enhance student engagement, belonging, and success.
- ▶ **ENSURE** the well-being of our community through equitable access to health and wellness resources, including mental health and wellness professionals.
- ▶ **CREATE** clear career development paths and promote professional development opportunities to support the growth of our community members.
- ▶ **DEVELOP** an equitable rewards and recognition system inclusive of all members of our community that incorporates the Clark School's values.
- ▶ **ORGANIZE** open and inclusive events that celebrate diversity, build meaningful connections, and increase engagement.
- ▶ **UPDATE** and expand the Clark School's common spaces to increase interaction and engagement among our community members.
- ▶ **ENHANCE** communications and promote a diversified system of shared governance to empower every member of the Clark School community to share their voice and to actively participate in the betterment of the school.

STRATEGIC PRIORITY 4

BUILD PARTNERSHIPS TO ENHANCE OUR IMPACT

Strategic partnerships, especially those that embrace Clark School values, are vitally important as they act as a tremendous force multiplier of our passionate pursuit of excellence in research, education, and service to our region and beyond. **Partnerships are the foundation for realizing our goals to solve societal grand challenges.** By engaging with the citizenry of Maryland; the state's innovation, entrepreneurship, and commercial ecosystems; and the vast array of federal institutions and corporations found in our local region, the Clark School is in a truly unique, enviable, and formidable position to accelerate positive outcomes and innovate for the public good. With our size, the Terp alumni network, ready access to unique resources, and commitment to advancing technological solutions and the people that drive them, the Clark School proudly embraces our responsibility to lead the way.



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OBJECTIVES

- **LEVERAGE** the unique ecosystem of the nation's capital region and pursue and cultivate partnerships that accelerate the pursuit of our mission.
- **GROW** partnerships that enhance our impact on communities across the state of Maryland and extend critical knowledge and expertise to meet society's most pressing issues.
- **PROVIDE** tools, facilities, and resources needed to pursue and cultivate meaningful partnerships that strengthen our impact in research, education, and translation to society.
- **FOSTER** partnerships that capitalize on our strengths to advance equality, prosperity, and security within national and global communities.
- **CULTIVATE** partnerships that recognize and include the highly diverse region we live in and provide access to engineering education and workforce development for all.



INITIATIVES

- **GROW** partnerships that build on the programs of Clark School departments, centers, and institutes that promote technological innovation, provide experiential learning opportunities for students, and that contribute to the technology economy and public good of the state and region.
- **PRIORITIZE** partnerships that involve high-impact, multidisciplinary challenges including those in energy, climate, data science, robotics, autonomy, national security, and health.
- **CREATE** programs that not only recognize our proximity to federal institutions but also embrace and financially support those relationships through Clark School student internships, seed-grant initiatives, bi-directional visiting professorships, and joint appointments.
- **FACILITATE** shared infrastructure relationships that extend resources and build cooperation and collaboration.
- **DEVELOP** partnerships with adjacent and distant Maryland communities, their leaders, and businesses that contribute to the rich diversity of thought, experience, and practice that is necessary to innovate, design, and demonstrate engineering's positive societal influence.
- **IDENTIFY** and pursue national and international partnerships, embracing the vast educational, research, and service-related relationships that have grown from our internationally recognized leadership in engineering.
- **INCREASE** engagement with education institutions (primary, secondary, and vocational) to build awareness of engineering careers and foster excitement within the next generation of engineers.
- **AMPLIFY** communication about our partnerships to increase community engagement and enhance partnership outcomes.



THE ROAD TO 2030

This strategic plan is an essential tool that will guide the Clark School community throughout our journey to 2030 and beyond. Implementation of the strategic priorities, objectives, and initiatives described in this plan will **propel us fearlessly forward in our commitment to Innovate for the Public Good**. We will use this plan—and progress toward our goals—to continue to grow the Clark School’s excellence and enhance the role we play in the University’s success.

This strategic plan seeks to guide the Clark School’s actions through 2030 with a strong focus on preparing our community to make a positive impact on the world around us by addressing major societal challenges of our time. We will develop implementation teams to help guide our activities that will address the objectives and goals of the plan. To ensure that we are making progress in fulfilling the objectives, we will perform regular assessments and use this feedback to further direct resources and investments.

Through our implementation teams, we will select specific metrics and quantifiable goals that help us define and measure success, but are flexible enough so that we may respond and adapt to the changing needs and opportunities of our community, our partners, and the engineering field. The Clark School’s leadership, including the Dean’s Office and representatives from each department, will drive implementation of this strategic plan and will consult with members of the Clark School community throughout implementation and monitoring.

Finally, this strategic plan is a **reflection of the Clark School community**—who we are, what we stand for, and where we are headed. This plan is more than a guide; it is a reminder of all we do in service of the public good and a commitment to a future in which the entire community—students, staff, faculty, and alumni—innovate and deliver grand solutions for a more equitable, sustainable, and vibrant world.



A. JAMES CLARK SCHOOL OF ENGINEERING



WE INNOVATE FOR THE PUBLIC GOOD

STRATEGIC PLAN 2024—2030

