EMPOWERING
EXCELLENCE
SHAPING THE
FUTURE

2023-2028
STRATEGIC PLAN

STEVENS
INSTITUTE OF TECHNOLOGY
1870

Schaefer School of
Engineering and Science

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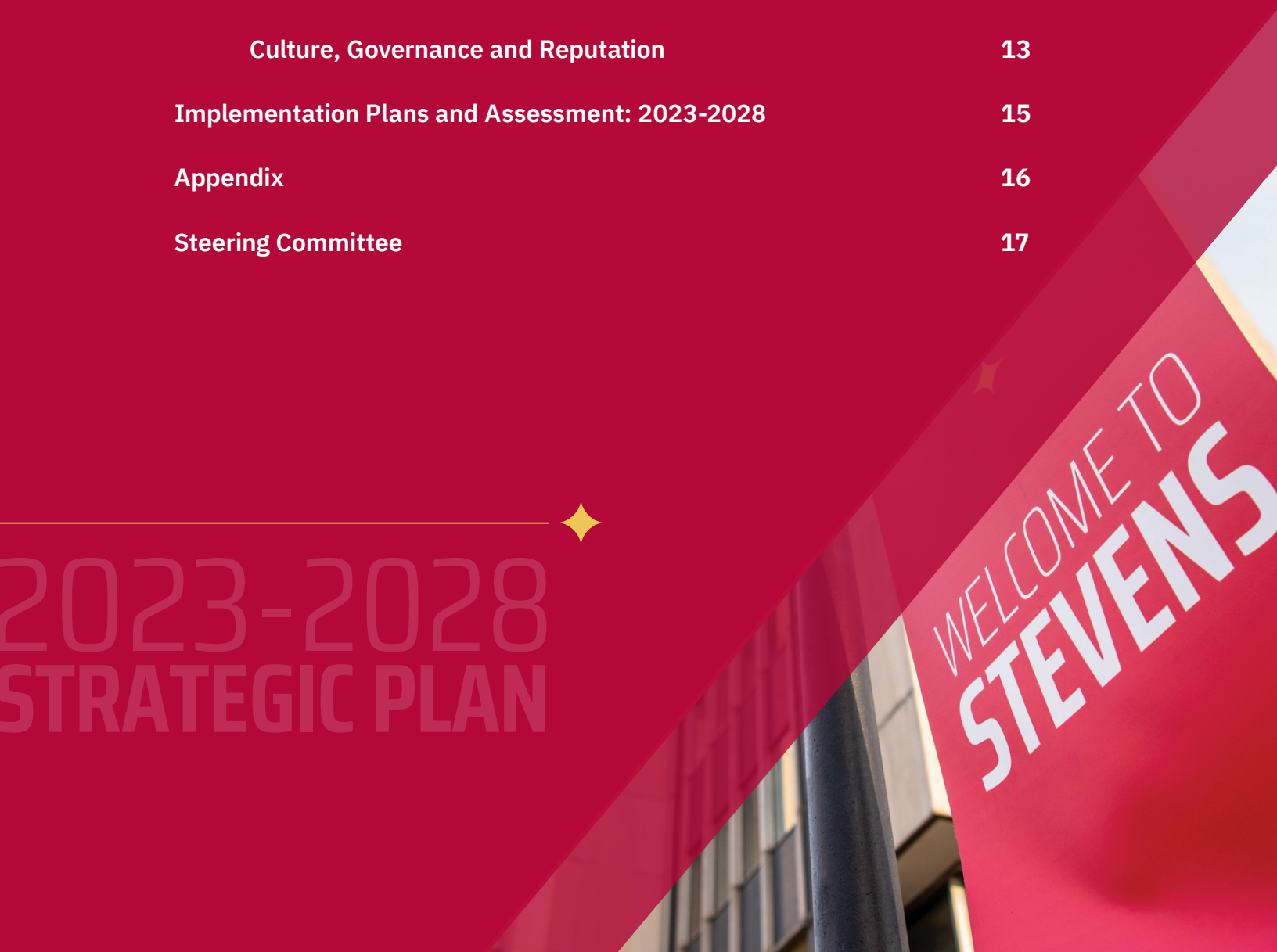

MESSAGE FROM THE DEAN

For more than 150 years, the Charles V. Schaefer, Jr. School of Engineering and Science at Stevens Institute of Technology has been home to people with a passion for learning and research. Today, we leverage our proud history of technological innovation and scientific discovery to pioneer promising solutions to some of the world's most pressing problems.

Over the past five years, largely due to the successful implementation of our first strategic plan, the Schaefer School has experienced unprecedented growth both in its size and in its accomplishments. We have undergone a tremendous transformation in our culture, spearheaded by energetic new leaders and the dedicated efforts of faculty and staff. The school has witnessed transformational changes built upon the positive trajectory at Stevens:

- Significantly strengthened academic leadership and professional staff teams.
- A record number of stellar faculty hired with well-structured mentorship support.
- Record undergraduate enrollment and solid graduate enrollment despite complex challenges.
- A thoroughly revamped engineering curriculum and creation of several new graduate programs.
- The introduction and implementation of doctoral training guidelines.
- A record number of peer-reviewed journal and conference publications.
- A record year for research awards and expenditures.
- A record number of faculty receiving prestigious federal Young Investigator Awards annually.
- Enhanced outward-facing communication, branding and networking.

During this time period, Stevens — and the world at large — saw many unprecedented challenges. The COVID-19 pandemic irrevocably changed our daily lives and impacted society in unforeseen ways. To adapt to this changing landscape, take advantage of new opportunities and maintain our momentum, I am pleased to present the new strategic plan for 2028: *Empowering Excellence, Shaping the Future.*

Our 2028 strategic plan features a renewed vision for future success, an emphasis on strengthening and supporting our faculty, a focus on undergraduate enrichment and a supportive graduate ecosystem, and an ambitious goal to expand our geographic reach.

I thank the strategic plan steering committee and the Schaefer School community for their diligent efforts, tireless outreach and collective wisdom contributed throughout the planning process and their dedication to the advancement of our school. I have the utmost confidence in the future of the Schaefer School and our ultimate goal of collaboratively building a world-class school of engineering and science.

Jean Zu, Lore E. Feiler Dean
Schaefer School of Engineering and Science

EMPOWERING
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INTRODUCTION

The Charles V. Schaefer, Jr. School of Engineering and Science is a community of innovators, deep thinkers, thought leaders and technological problem solvers.

In 2022 the university unveiled its latest 10-year strategic plan, *Stevens 2032: Inspired by Humanity, Powered by Technology™*. The Schaefer School is committed to aligning our strategic vision with that of the overall university with the development of our own strategic plan titled *Empowering Excellence, Shaping the Future*.

The Schaefer School community has collaboratively identified five areas of strategic opportunity to propel our research, education and reputation toward becoming a first-tier research university. The following goals were established under each domain to make strides toward achieving our vision and embodying our mission:

FACULTY DEVELOPMENT

Strengthen and grow a faculty at all ranks that is representative of our diverse society and provide resources and an academic environment that enables them to be inspiring and innovative educators, researchers and academic leaders.

UNDERGRADUATE STUDIES

Develop an engaging and energetic undergraduate ecosystem that enriches learning experiences and broadens the perspectives of our graduates.

GRADUATE STUDIES

Develop a supportive graduate ecosystem that attracts high-quality doctoral and master's students with diverse backgrounds and empowers them to thrive academically, professionally and personally.

RESEARCH, INNOVATION AND ENTREPRENEURSHIP

Expand the national footprint and elevate the impact of our research and innovation through excellence of scholarly products and creativity of technological solutions for societal benefits.

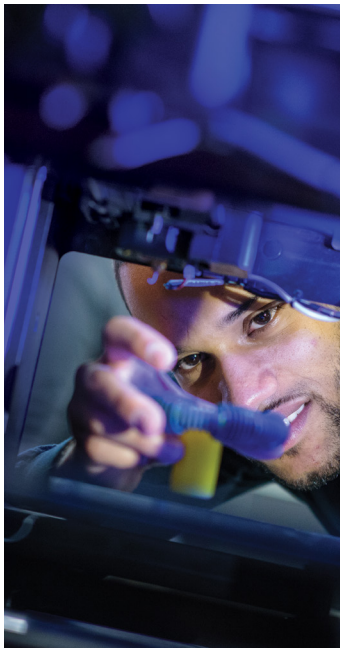
CULTURE, GOVERNANCE AND REPUTATION

Develop governance, infrastructure and initiatives to support an inclusive and collaborative culture among faculty, staff, administration and alumni and to foster an environment that enhances our reputation.

The strategic plan is intended to be an adaptable document that can meet new or unforeseen challenges and opportunities. Our next steps involve developing and securing important resources necessary for implementation, as well as fostering an academic environment conducive to successful implementation. We will closely monitor our progress utilizing key measures of success, with special emphasis on the indicators used for the *U.S. News and World Report* school rankings.

VISION

To be a premier education and research enterprise that nurtures students of all backgrounds to become future innovators and leaders and that enables diverse faculty to advance science and technology frontiers for the benefit of humanity.



MISSION

- To equip students with foundational knowledge, problem-solving skills, an entrepreneurial mindset and global perspectives, and inspire them to become future innovators and leaders.
- To create new knowledge and develop transformative solutions to major societal challenges for sustainable economic growth and for the prosperity of mankind.

VALUES

The Schaefer School adheres to the following core values of the university:

- Excellence
- Integrity
- Student-Centricity
- Collaboration
- Innovation
- Diversity, Equity and Inclusion
- Sustainability

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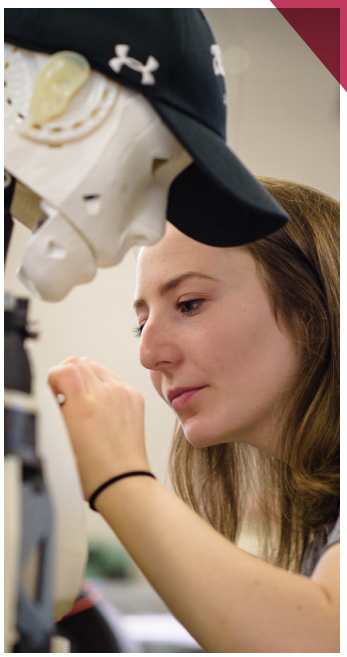
FOUNDATIONAL
RESEARCH PILLARS



ARTIFICIAL INTELLIGENCE AND COMPUTING

- Application AI
- Computational mathematics
- Computational sciences and methodologies
- Data science
- Foundational AI and machine learning

BIOMEDICAL AND HEALTHCARE SCIENCE AND TECHNOLOGIES

- Biomaterials and regenerative medicine
- Biomechanics and rehabilitation
- Data harvesting to improve healthcare
- Drug discovery, pharmaceutical development and precision medicine
- Imaging and devices
- Immunology and infectious and inflammatory diseases
- Neuroscience and engineering

CYBER-PHYSICAL SYSTEMS

- Complex systems design and computing
- Cybersecurity and communication
- Human–machine interactions and assistive devices
- Robotics, autonomous systems and control
- Smart infrastructure

ENERGY AND SUSTAINABILITY

- Clean and renewable energy generation and transport
- Climate and ocean science and engineering
- Energy storage and transmission
- Environmental sustainability and resilience

QUANTUM ENGINEERING AND SCIENCE

- Experimental quantum optical engineering
- Quantum many-body systems and applications in AI
- Quantum photonics and quantum materials

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FACULTY DEVELOPMENT

GOAL

To strengthen and grow a faculty at all ranks that is representative of our diverse society and provide resources and an academic environment that enables them to be inspiring and innovative educators, researchers and academic leaders.

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STRATEGIES AND INITIATIVES

- Recruit outstanding faculty in foundational pillar areas to build a critical mass, cutting across disciplines.
- Increase recognition of major teaching, research and service accomplishments of all faculty.
- Provide resources and training to facilitate faculty development at all ranks.
- Prioritize faculty well-being by providing improved support and resources.

FACULTY DEVELOPMENT

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UNDERGRADUATE STUDIES

GOAL

To develop an engaging and energetic undergraduate ecosystem that enriches learning experiences and broadens the perspectives of our graduates.

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STRATEGIES AND INITIATIVES

- Achieve a more uniform student/faculty ratio across departments.
- Support student connection and engagement with programs, departments and the Schaefer School.
- Provide formal support for undergraduate teaching effectiveness.
- Promote and seamlessly integrate co-curricular activities to support student learning within the new Institute-wide curriculum.
- Increase the integration of alumni and industry within undergraduate curricular and co-curricular activities.

UNDERGRADUATE STUDIES

GRADUATE STUDIES

GOAL

To develop a supportive graduate ecosystem that attracts high-quality doctoral and master's students with diverse backgrounds and empowers them to thrive academically, professionally and personally.

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STRATEGIES AND INITIATIVES

- Expand Ph.D. programs with high-quality doctoral students through attractive financial support and innovative doctoral training opportunities.
- Strengthen the master's curricula and increase the quality of students with balanced enrollments in all disciplines.
- Enrich campus experiences of graduate students through valuable extracurricular activities.
- Prepare and support students for a successful career.

GRADUATE STUDIES

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RESEARCH, INNOVATION AND ENTREPRENEURSHIP

GOAL

To expand the national footprint and elevate the impact of our research and innovation through excellence of scholarly products and creativity of technological solutions for societal benefits.

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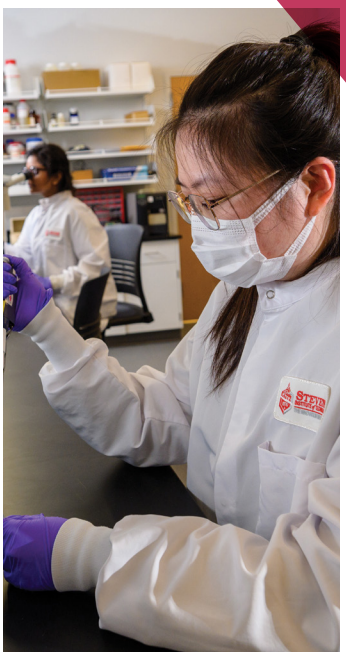
STRATEGIES AND INITIATIVES



- Continue to grow the faculty in all ranks in foundational research pillars and to strengthen the culture of research collaboration.
- Encourage and support interdisciplinary and multi-institution grant endeavors to strengthen existing research centers and to establish new national research centers of excellence.
- Expand our research portfolios with diverse funding sources and strive for research excellence.
- Build, upgrade and maintain modern physical research infrastructure commensurate with our aspiration to become a top-level academic research enterprise.
- Effectively support faculty in research proposal development, award management and entrepreneurial endeavors.

RESEARCH, INNOVATION AND ENTREPRENEURSHIP

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CULTURE, GOVERNANCE AND REPUTATION

GOAL

To develop governance, infrastructure and initiatives to support an inclusive and collaborative culture among faculty, staff, administration and alumni and to foster an environment that enhances our reputation.

STRATEGIES AND INITIATIVES

- Foster a healthy work environment and culture of inclusion and collaboration between faculty, staff, departments and the administration.
- Improve the operational and digital infrastructure.
- Strengthen and expand the geographic reach of our reputation.
- Create and grow purposeful opportunities for alumni and industry engagement.

CULTURE, GOVERNANCE AND REPUTATION

2023-2028 STRATEGIC PLAN

IMPLEMENTATION PLANS AND ASSESSMENT: 2023-2028

The Schaefer School of Engineering and Science strategic plan focuses on the overarching goals and initiatives for the next five years. The plan's success lies primarily in its implementation, which dictates how we will achieve those goals.

As with the previous strategic plan, a detailed implementation planning process is to follow. The essential details of the implementation plan will be revisited annually to continually incorporate what we've learned.

Our regular efforts — from recruiting high-quality faculty to strengthening departmental leadership and building strong connections with our alumni and other prestigious universities — provide a strong foundation through which to execute implementation.

Members of the Schaefer School's leadership team are responsible for individual goals and will collaborate with department chairs and other stakeholders to begin developing a synergistic roadmap for implementation, as well as avenues for assessment. Customized approaches and targets relevant to each area outlined in the strategic plan will be included with each respective implementation plan.

The Schaefer School community will be updated regularly by the leadership team about implementation planning, progress and successes in the coming months. Implementation efforts and results will be monitored closely, and goals and tactics will be adjusted as necessary.

The commitment of Schaefer School leadership and engagement of our faculty will be the determining factor in a successful implementation. We will all work together to build on our previous plan's foundation and achieve the lofty goals set before us.

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APPENDIX

PLANNING STRATEGY

The following documentation and processes were used to develop the 2023-2028 strategic plan:

- Stevens Institute of Technology 2032 Strategic Plan
- Charles V. Schaefer, Jr. School of Engineering and Science 2023 Strategic Plan
- Dean's 2022 Self-Study Report and community surveys
- Focused deliberations in domain-specific areas by subcommittees:
  - SWOT analysis
  - Goals, strategies and initiatives, metrics, and five-year targets in each area
- Collective wisdom of the Schaefer School committee and key stakeholders

COMMUNITY ENGAGEMENT FOR INPUT

In addition to online surveys sent to the internal and external community and the School of Engineering and Science Town Hall, the committee engaged the following groups for feedback:

- Dean's Faculty Advisory Council
- Dean's Student Advisory Council
- Doctoral Committee
- Graduate Studies Committee
- Research center directors
- Research Committee
- Schaefer School Faculty Senators
- Schaefer School Board of Advisors
- School leadership team
- Undergraduate Curriculum Committee

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STEERING COMMITTEE

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Associate Professor
Chemical Engineering and Materials Science

Eduardo Bonelli
Teaching Professor
Computer Science

Jan Cannizzo
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Jessica de Veyga
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Henry Du
Professor and Associate Dean for Research
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Committee Chair and Research, Innovation and Entrepreneurship Committee Lead

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Mechanical Engineering
Culture, Governance and Reputation Committee Co-Lead

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We are a community of innovators, motivated by solving problems, compelled to advance technological progress and improve the lives and condition of our global society.

We are Inspired by Humanity, Powered by Technology™.

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