

COLLEGE OF ENGINEERING

ENGINEERING EXCELLENCE FOR THE PUBLIC GOOD

Strategic Plan 2022-2027

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The **University of Washington** acknowledges the **Coast Salish peoples** of this land, the land which touches the shared waters of all tribes and bands within the Suquamish, Tulalip and Muckleshoot nations.



PREFACE

One of our great strengths is our commitment to collaboration — a shared pursuit of discovery, community connections and local and global partnerships. We know that by working together we magnify our impact and embrace boundless possibilities.

In 2020, in preparation for a brighter future, our community took up the call to craft a collective vision for the UW College of Engineering grounded in inclusive excellence and equity. This plan is a product of that work — our community's commitment to every one of its members, to all of our partners and to the public good in the broadest of terms. This vision will serve as our roadmap for the next five years and will direct the investment of our resources —human, financial and physical.

The College comprises ten distinct but interrelated areas of engineering: *aeronautics and astronautics; bioengineering; chemical engineering; civil and environmental engineering; computer science and engineering; electrical and computer engineering; human centered design and engineering; industrial and systems engineering; mechanical engineering and materials science and engineering.* References to "we" and "the College" throughout this plan represent all of these areas — all of us.



INTRODUCTION

In the UW College of Engineering, we believe in engineering education that is academically meticulous, technically rigorous, collaborative, inclusive and expansive. Engineering education must prepare students to create significant and visible societal impact, helping to shape a healthier and better world. As we move forward, we are committed to *engineering excellence for the public good.*

Engineers are problem solvers, makers and inventors. Throughout history engineering has transformed society with its innovations — electrification, refrigeration, air travel, computing — and today our work shapes our infrastructure, technology, transportation, health, environment, manufacturing and so much more. Engineering for the public good pursues solutions that improve the quality of life for all.

As society's needs grow more rapidly than ever, this pursuit may seem like a daunting challenge. Where do we begin? We believe the answer starts with an inclusive engineering student experience grounded in technical excellence.

Research shows that diverse and inclusive teams lead to better, more innovative solutions. The College has a long history of producing outstanding engineers; now is the time to push boundaries and broaden the impact of our work.

This plan addresses the most important questions we face:

- What does it mean to truly tackle society's greatest challenges in our classrooms and labs, and how do we lead in this space?
- How do we shape an engineering student experience in which collaboration, inclusivity, health and well-being are critical to our academic excellence and innovation?
- How can we translate our ideas into more breakthroughs, more equitable and interdisciplinary collaborations, more partnerships and more market- and community-ready applications?
- How can we raise our visibility, ensure a secure financial future and work more efficiently?

We are uniquely qualified to address these questions. Here's why:

• We are a powerful engine of opportunity in a region driven by innovation. Situated in one of the country's most vibrant environments of commercial strength, engineering is essential to our region's growth. Our industry partners are world



leaders in aerospace, transportation, computing, e-commerce, software and consumer electronics, as well as innovators in clean energy, quantum computing, medicine, data science and artificial intelligence.

- We are an internationally recognized leader in engineering education and a tierone research institution.
- We work across disciplines and collaborate to solve problems, creating innovative and impactful outcomes through our research, teaching and learning.
- We measure our discoveries by their impact. Social responsibility has little meaning if we cannot translate our work into solutions for global challenges.
- We are implementing cultural transformation and sustainable change for all members of our community. Diversity of disciplines, backgrounds, identities, abilities and experiences is at the heart of our communal strength, our capacity to learn from one another, and the way we collectively frame and solve problems.
- We work with and for the state of Washington. We seek opportunities to match our academic capital with the needs of the people of Washington through collaborations with local, regional and state organizations.
- We serve industries and communities worldwide, scaling our discoveries, research excellence and educational innovations for impact across the nation and around the globe.

Engineering excellence for the public good calls on all of us to work together — to the notion that "we" is indeed greater than "me." Our new chapter begins now. We hope you'll join us on our journey.



OUR MISSION

We are dedicated to engineering excellence for the public good — educating and training outstanding engineers, driving discovery and forging partnerships to create transformational, sustainable and equitable impact for our state, nation and planet.

OUR VISION

We will be a globally recognized leader in inclusive engineering that crafts solutions to the most pressing challenges of our time, generating societal impact and creating a better world.

OUR VALUES

Collaboration Diversity Equity Excellence Inclusion Innovation



STRATEGIC PRIORITIES

We will realize our vision by pursuing four focused and interlocking priorities:

I. Creating a healthier and more just world through our work

We are committed to making the world a better place — by producing the highest quality engineering graduates and research — and by engaging the public and our community in the engineering process. Considering human impacts along with technical excellence makes our collective work better, more credible and longer lasting. By working in concert with the people of our community, we can better understand their challenges, craft more responsive solutions and avoid unintended consequences. Similarly, we recognize that creating a healthier world starts on campus within our engineering community. We are committed to prioritizing the physical and mental health and well-being of our students, faculty and staff.

To create a healthier and more just world, we will:

1. Ground our curriculum in technical excellence, a commitment to the public good, and the translation of discoveries into real-world applications

- Design an undergraduate engineering curriculum that adapts to changing student demographics and societal needs and introduces students to:
 - Core and advanced engineering competencies and their application
 - Interdisciplinary inquiry and problem-solving
 - Innovation, entrepreneurship and technology translation
 - Leadership and collaborative skills
 - Technology's interaction with natural and social environments
 - Engineering ethics
- Construct a distinctive curriculum that promotes commitment to the public good in classroom and experiential learning, and launch collaborative initiatives with nonprofit, government and community organizations to address specific local and global societal problems.

2. Distinguish the College by focusing on high-impact, large-scale, interdisciplinary research centered on the public good

• Develop the administrative infrastructure to support collaborative research efforts in the pursuit of national engineering research centers.



- Deepen and expand affiliations with UW colleges, schools, institutes and centers to strengthen existing partnerships and to identify promising interdisciplinary collaborations.
- Establish joint hiring processes with other universities, industry, nonprofits and national laboratories to recruit research leaders who will pursue and direct large, multidisciplinary collaborative grants.

3. Augment the College's relationships across the health sciences to accelerate solutions to critical health-care issues

- Strategically expand cross-campus and community collaborations to advance and improve health care and health-care equity.
- Craft curricular and experiential opportunities for engineering students to explore medicine and to collaborate on the next generation of health-care solutions.

4. Encourage and incentivize collaborations and partnerships that serve the public good

- Build strong relationships and partnerships with state and local governments with a focus on bridging the knowledge gap between public policy and technology.
- Enhance capacity for equitable collaboration between the College and local and global communities, including building meaningful partnerships with government and community organizations

II. Embracing the power of diversity, equity and inclusion

While engineering advances have transformed society, they have also frequently widened inequities. The history of exclusion, inequity and lack of diversity in engineering is one of the biggest challenges the field faces today. We know that organizations are most innovative when their members represent and draw upon a variety of backgrounds — lived experience, culture, age, identities, abilities, disciplines and working and thinking styles — and respect the perspectives that arise from these differences. For these reasons, diversity, equity and inclusion (DEI) are central to the College's mission of producing outstanding engineers who are capable drivers of innovation, as well as responsible, engaged global citizens and agents of societal change.



The state of Washington has one of the largest populations of Indigenous peoples in the United States. We recognize a special duty to acknowledge that the College is situated on Indigenous lands and that we not only respect tribal sovereignty but also have a responsibility to give agency to and be inclusive of Indigenous communities.

We are committed to being a welcoming community that engages all of its diversity in the service of student and organizational learning. By grounding engineering education, research and innovation in inclusive excellence, we can better support and broaden equity in engineering.

To embrace the power of diversity, equity and inclusion, we will:

1. Attract, recruit, develop and retain diverse students, faculty and staff

- Establish ARSR (attract, recruit, select and retain) goals and best practices for underrepresented groups and/or specific dimensions of diversity. Review ARSR systems with DEI and intercultural competency lenses.
- Increase our transparency by establishing a diversity data collection to document, evaluate and share our recruitment and retention efforts.

2. Develop structures, practices and people skills that embed and leverage the value of DEI in all College activities

- Develop and actualize an integrated DEI structure to increase communication and collaboration programs and plans for leaders and staff.
- Establish a DEI leadership training and development program to enhance knowledge and skills to facilitate organizational change.
- Create an intercultural development training program for those who manage faculty, staff and students, and integrate intercultural development in our curriculum and orientation programs.
- Develop and implement a DEI communications plan for the College.
- Recognize, amplify and reward DEI and social good leadership in the College.



3. Build a robust College community culture where all members thrive, are valued and feel a sense of belonging

- Increase dialogue and shared understanding around DEI through systems to increase awareness, prevention, reporting, response and resolution of bias and harassment incidents.
- Identify, highlight, support and develop best practices on welcoming and supporting underserved or underrepresented faculty, staff and students.
- Develop and put into action specific measures to acknowledge and support sovereignty and increase collaboration with tribal communities.
- Deepen and expand practices that increase the voice and involvement of underserved or underrepresented groups in decision-making processes.
- Prioritize the health and wellness of all our students, staff and faculty by listening, offering information and resources, creating flexibility when needed and ensuring no one feels they must choose between health and productivity.

III. Translating innovation into impact

As part of a tier-one public research university with a global footprint, the College produces world-class research that supports economic development in Washington state and improves lives and communities around the world. To have such tangible impact, we must translate our ideas into community-ready and market-ready applications. To do so requires nurturing skills in social and commercial entrepreneurship; strengthening our infrastructure for patenting, licensing and commercialization; and deepening our partnerships with community and nonprofit organizations, government and industry.

To translate innovation into impact, we will:

- 1. Grow cross-departmental and cross-campus cooperation to significantly increase technology translation
 - Build a network of experienced College faculty willing to guide colleagues in the translation process and designate scouts who have start-up experience to identify promising candidates and steer them to application.



• Broaden merit and promotion processes to recognize commercial and social entrepreneurship activities such as patents, licensing and start-ups as examples of scholarly contribution.

2. Increase student and postdoctoral-scholar engagement with social and commercial entrepreneurship

- Design a College-wide entrepreneurship curriculum connected with and drawing on entrepreneurship education across the UW.
- Collaborate with the Foster School of Business and CoMotion to amplify entrepreneurship competitions.
- Establish networking events and programs that bring engineering students and postdoctoral scholars together with students from across the UW to identify technology innovation and translation opportunities.

3. Broaden and extend College partnerships with industry

- Expand partnerships with local and regional industries by positioning College faculty and students within companies and company personnel within the College.
- Develop innovative approaches to engineering education that address industry professional development needs.
- Strengthen the relationship between industry and postdoctoral scholars, graduate and undergraduate students especially those from historically underserved communities through mentorship, increased co-op and internship opportunities, and industry-funded grants.
- Build strong relationships with venture capitalists, angel investors and investment firms in partnership with CoMotion to educate potential College faculty, staff and student entrepreneurs.
- Resolve intellectual property issues that hinder commercialization efforts and explore new approaches that facilitate early industry engagement and collaboration in the technology translation process.



IV. Investing strategically in our future

The College provides a remarkable return on the resources entrusted to it by students and their families, the state of Washington, federal funding agencies and generous donors and sponsors. This return is evident in the quality of our student experience; the global reputation of our researchers; the excellence and diversity of our graduates; our significant contributions to the economic vitality and quality of life in Washington, the nation and the world; and the innovative solutions we generate for society. We acknowledge that our resources are finite and we commit to their stewardship while we catalyze new initiatives.

To achieve the goals of this strategic plan, we will:

1. Strengthen the College's financial foundation and physical infrastructure

- Develop an analytically rigorous College financial plan to enable the full realization of the vision of this strategic plan.
- Expand program offerings including online programs, certificates, short courses, professional master's programs and other initiatives to attract new student cohorts, extend the College's reach and impact, and increase net tuition revenue.
- Explore opportunities to broaden the College's income streams, providing incentives and venture funds to seed new and innovative initiatives that generate additional revenue.
- Increase the College's private revenues to provide permanent, endowed funding; industry funds, and support for student programming and support.
- Strengthen the College's physical infrastructure to support its education and research, including completion of the new Interdisciplinary Engineering Building and strategic renovation and retrofitting of current facilities and equipment.

2. Create and promote a compelling brand identity for the College that captures our excellence and impact

• Develop a College brand identity and communications strategy in alignment with the University's brand that supports the College's objectives and advances broad-based engagement.



• Leverage the brand identity internally to strengthen affinity with and pride in the College among its departments and our faculty, staff and students.

3. Enhance the well-being and professional development of our staff

- Promote continuous learning that encourages professional and personal development and improved job satisfaction.
- Create clear career pathways and advancement opportunities.
- Build mechanisms that enhance communication, innovation and sharing of best practices across administrative divisions and between academic and administrative units.
- Support a culture in which our staff are valued and respected and health and well-being are prioritized.

4. Use transparent, understandable and data-driven analytics to assess and improve the College's performance and align incentives with our priorities

- Improve and integrate data to support decision-making by implementing tools without increasing the burden on faculty and staff.
- Develop a robust understanding of the economic value created by the College through such tools as a performance management system, academic cost/contribution analyses and economic impact studies.
- Use this strategic plan to direct new initiatives, resource allocations, policy changes and activities with significant bearing on our stakeholders.

5. Leverage existing resources and expertise to increase operational efficiency

- Expand the College's Collaboration Core which provides administrative support for interdisciplinary institutes, centers and facilities as the number of institutes and research centers at the College grows.
- Enhance collaboration and sharing arrangements among our academic departments and administrative units in such areas as computing, DEI, marketing, public records requests and technical support.
- Streamline administrative processes to better support faculty, staff and students and improve the efficacy of their work.



Conclusion: Achieving our vision

This strategic plan asks a lot of each of us. Our success depends on our willingness to hold each other accountable. But in the College of Engineering, we love a challenge — no one steps up faster when new ways of doing and thinking are called for. We are bound to the community and to each other. We know what we are capable of, and our institutional will has never been clearer. Together we will engineer a stronger College of Engineering — and a more equitable, inclusive and sustainable future for our community, the state of Washington and the world.

Implementation

A College Implementation Planning Committee has prepared an initial implementation plan that defines metrics, estimates resource needs and proposes timelines for the realization of each priority in this strategic plan.

Just as this strategic plan outlines high-level goals, the implementation plan lays out quantitative SMART (specific, measurable, achievable, realistic and time-bound) goals for the next five years. While this strategic plan provides an overall guide for the College's growth and development, the implementation plan will serve as a roadmap, providing milestones and targets and indicating at the end of each of the next five years how far we have come towards realizing our aspirations. We will publish an implementation update every year to measure progress, acknowledge successes and identify areas that are behind the expected level of achievement.

The strategic plan and its companion implementation plan will guide resource allocation and budget decisions; serve as a basis for annual performance evaluations of College leaders and staff; measure key indicators; and shape future policy and procedures.



APPENDIX

When we began work on this strategic plan in early 2020, we had little idea what the future held. That spring, the University of Washington had been the first in the country to announce that classes would be conducted remotely in response to COVID-19. As the year progressed, we experienced individual and collective hardship, loss and injustice. And yet, throughout it, we were reminded of the power of community.

What defines our community? Above all, it's our belief in possibility, our optimism and our determination. It's a connection to one another near and far. It's a drive that pushes us to tackle challenges and pursue progress. It's the conviction that together we can create a world of good.

The planning process

As one of her first major initiatives, College of Engineering Dean Nancy Allbritton began a process to develop a new strategic plan in alignment with the University's values and key initiatives.

The strategic planning process was designed to be collaborative and to invite the participation of college and campus communities, both internal and external. During the process we assessed the College's strengths and weaknesses and identified its competitive advantages and points of differentiation. We explored how the College can have the greatest impact on engineering education and research, support the mission of the University of Washington, and provide innovative solutions to society's greatest challenges. This plan provides a new vision for the College and sets direction, focus and priorities for 2022-2027.

Sincere thanks to the following individuals who shared their time and talent in the creation of this plan:

Strategic Plan Steering Committee

The Committee is composed of faculty, staff and students, and served as the primary working body for the strategic planning effort — exploring bold and diverse ideas and options for the College's future, examining research and data, conducting analyses, and reviewing and shaping drafts of the strategic plan.

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Subcommittees

Seven subcommittees composed of faculty, staff, students and external partners were formed to recommend how the College could undertake to address these goals and topics identified by the Steering Committee. The subcommittees were charged to propose aspirational, ambitious and distinctively UW College of Engineering strategies and initiatives that would move us demonstrably closer to achieving the given goal or topic.



A Powerful Engine for Public Good

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A Distinctive Research Agenda Recognized Worldwide

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Increase and Diversify the College's Partnerships

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UW College of Engineering Visiting Committee

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