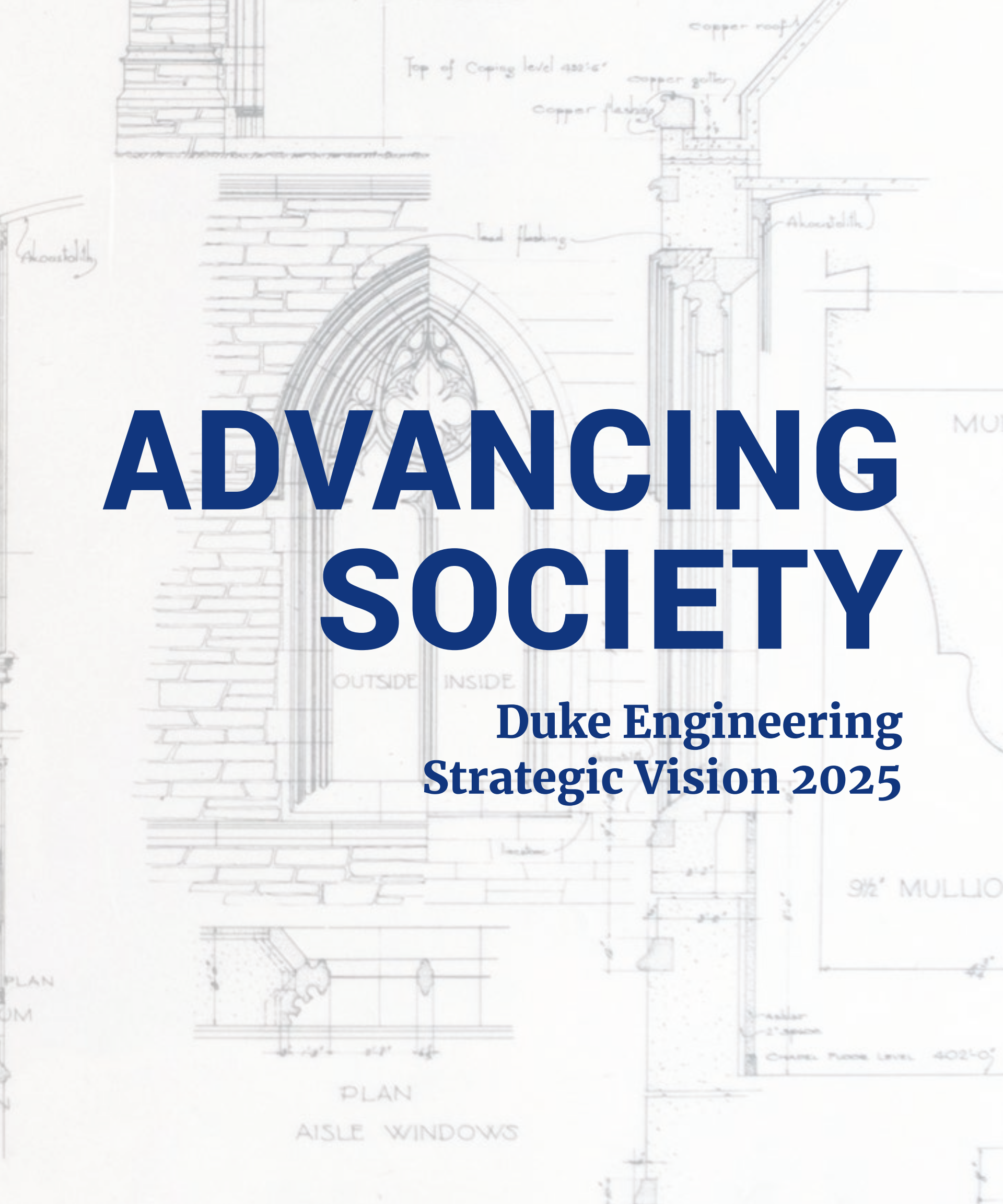


The background is a detailed architectural drawing of a Gothic window. It features a cross-in-square tracery design within a pointed arch. The drawing includes various technical annotations: 'Top of Coping level 402'-6"' at the top, 'Copper roof' and 'Copper gutter' on the right, 'Copper flashing' near the gutter, 'Akoustolith' on the left and right sides, 'Lead flashing' above the window, 'OUTSIDE INSIDE' labels on either side of the window, '9 1/2" MULLION' on the right, 'PLAN' and 'AISLE WINDOWS' at the bottom, and 'CHANCEL FLOOR LEVEL 402'-0"' at the bottom right. The drawing is rendered in a light blue/gray color on a white background.

# ADVANCING SOCIETY

**Duke Engineering  
Strategic Vision 2025**

**DUKE ENGINEERING STRATEGIC VISION**

First Edition | November 2025

**PUBLISHER**

Duke University  
Pratt School of Engineering  
Office of Strategic Communications  
& Marketing

**WRITING & EDITORIAL**

Angela Brockelsby, EdD  
Ken Kingery  
Jerome P. Lynch, PhD, F.EMI

**DESIGN & LAYOUT**

Mandy Butler

**PRINCIPAL PHOTOGRAPHY**

Angela Brockelsby, EdD  
Jared Lazarus  
Alex Mousan Sanchez  
Bill Snead

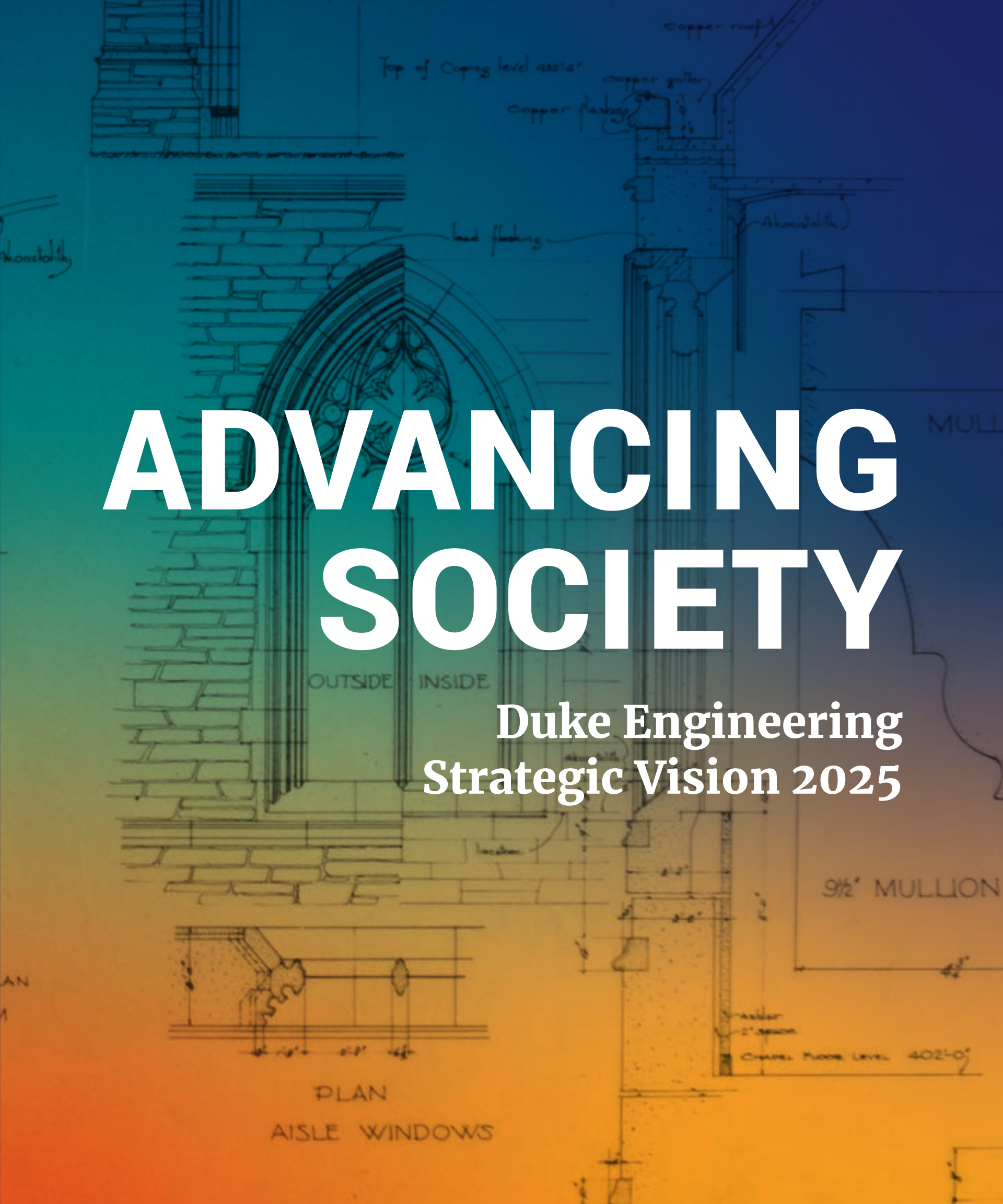
**ADDITIONAL IMAGES**

Ballinger  
Samara Brogan  
Mandy Butler  
Anna Dengler / DEID  
Anya Dias-Hawkins / DEID  
Duke University Archives  
Duke University Photography  
Chris Hildreth / Rooster Media  
Jonathan Lee / Discover Durham  
Dylan Makar / Protect3D  
Michaela Martinez  
Eamon Queeney  
Skidmore, Owings & Merrill  
Andrew Tie  
Junjie Yao  
Ayman Yousef

**PROJECT LEADERSHIP**

Jerome P. Lynch, PhD, F.EMI,  
Vinik Dean of Engineering

© 2025 DUKE UNIVERSITY

The background is a detailed architectural drawing of a Gothic window. The drawing includes various technical annotations such as 'Top of Coping level 432'-6"', 'Copper roof', 'copper gutter', 'copper flashing', 'lead flashing', 'Abutment', 'MULLION', 'OUTSIDE INSIDE', 'location', '9 1/2" MULLION', 'Chapel Floor Level 402'-0"', and 'PLAN AISLE WINDOWS'. The drawing is rendered in a light blue and yellow color scheme, with the main title text overlaid in white.

# ADVANCING SOCIETY

Duke Engineering  
Strategic Vision 2025

# FROM THE DEAN



Dear Colleagues,

I could not be more excited to share with you Duke Engineering's 2025 Strategic Vision!

The foundation of my life's work as an engineer is my unwavering belief in the good of technology. There are countless examples of technology as a force for good: Our cell phones ensure we never get lost in a new city, wearable glucose sensors keep a diabetic family member healthy, and agentic artificial intelligence helps us automate workflows in our jobs. While my professional oath requires me to advance technology for the good of society, it is my engineering instinct that inspires me to solve the most complex and seemingly intractable global challenges of our time.

History is often viewed as the story of how global forces led to societal transformation. What makes this moment so historic is the emergence of strong technological forces converging with economic, political, and environmental forces that will rapidly transform our society. Technologies like artificial intelligence, biotechnology, and

**As a profession in  
First, what type of  
and second, what**

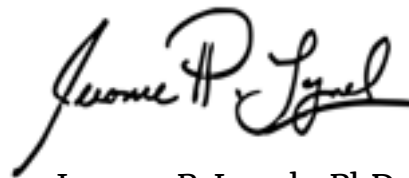
digital assets all have the potential to lead to a transformation that improves our quality of life and ensures future generations are prosperous. At the same time, these technological forces can also accelerate global challenges such as warfare, wealth disparities, and environmental degradation if we are not careful. As a profession in service to society, we must ask two questions: First, what type of societal transformation do we want to achieve, and second, what role do we want to play in achieving that goal?

In your hands, you find the strategic vision of the Pratt School of Engineering, which fundamentally answers these two questions. Duke engineers are committed to creating a society where community members are healthy, culture inspires innovation, operations are based on “smart” technology, the built environment is sustainable, and all community members are uplifted. The vision offers insights into the role we will play in achieving a healthy, innovative, smart, sustainable, and uplifting society. Specifically, it offers a look into many of our education, research, and outreach activities that align with these five societal attributes.

As a university, our role is also to prepare tomorrow’s technological leaders to drive these changes forward. At Duke, we aim to produce leaders who are not only professionally competent but also socially engaged and considerate of the ethical and equity dimensions of the solutions being produced.

I hope our strategic vision inspires others to join us in this crusade to advance technology for the common good. Recent changes in the relationship between higher education and the public demand a collective recalibration to ensure we preserve the potency of our national innovation ecosystem. We stand ready to join together to solve the grand challenges we face while advancing a better society for all.

Enjoy!



Jerome P. Lynch, PhD, F.EMI  
Vinik Dean of Engineering  
Duke University

**service to society, we must ask two questions:  
societal transformation do we want to achieve,  
role do we want to play in achieving that goal?**

# STR FOUN





# OUR ATEGIC DATATION

# OUR PURPOSE

# **At Duke Engineering, we advance discovery and technologies that make a difference in people's lives.**

We focus on engineering innovation that matters, pushing boundaries in research to deliver solutions that address genuine human needs.

In the classroom, we teach students to lead with purpose, empathy, and resilience.

And beyond campus, we translate discoveries into real-world impact, bringing ideas to life in the communities we serve.

We are here because engineering, at its best, serves humanity.

# FOUR GUIDING PRINCIPLES



# 1. Think Boldly, Act With Purpose

We believe in the power of bold ideas backed by meaningful action.

We give students space to explore, experiment, and engage deeply—connecting their learning with alumni networks, industry mentors, and real-world challenges.

# 2 • Cross Boundaries, Spark Innovation

Interdisciplinary thinking isn't an add-on.  
It's built into who we are.

Duke's collaborative culture brings engineers together with experts in medicine, business, public policy, law, and the humanities. These partnerships lead to fresh insights and unexpected ideas, with impacts that reach well beyond campus.





## 3 • Engage and Amplify Impact

We know that meaningful work doesn't happen in a vacuum.

We build trusted relationships with alumni, local communities, regional partners, and industry collaborators. By making it easier to work with us—and to listen, learn, and co-create—we extend the reach and relevance of our teaching and research.

# 4 • Create a Community Where Everyone Belongs

People thrive when they feel seen, supported, and empowered.

At Duke Engineering, we foster inclusive excellence, providing clear opportunities for growth and ensuring every voice is heard and valued.





## Building Upon a Legacy

**Hudson Hall**, long the heart of Duke Engineering, is being reimagined for the next century of innovation and community.

Light-filled labs, collaborative spaces, and modern classrooms will connect students, faculty, and ideas across disciplines. This transformation honors our legacy while creating a welcoming home where every member of our community can learn, design, and discover together.



# THE EVOLVING LANDSCAPE



# There has been no better time to be an engineer than today,

as we witness a rapid acceleration of astonishing discoveries across fields like quantum physics, biology, neuroscience, and climate science. These scientific advances are sure to fuel the next wave of transformative applications in engineering.

For example, deeper insights from neuroscience, such as how the human brain processes information, are unleashing new means of artificial intelligence that are certain to revolutionize many industry sectors, such as health care and finance. Another is leveraging quantum mechanics to create quantum computers that will offer exponential gains in computational power at a fraction of the energy used to power today's silicon-based machines.

These paradigm-shifting discoveries arrive at a pivotal time. Global communities face daunting challenges—from climate disruption and environmental degradation to resource depletion and widespread health disparities—that demand creative engineering solutions that can rapidly scale. Much like when our nation rallied in the 1960s to put a person on the moon, we are now primed to pursue bold technological solutions to new challenges. A decade of public investment in science and technology took us into space with computers less powerful than a modern watch. Imagine what we can achieve today.

Given the scale and complexity of the challenges we face, the success of our solutions will not solely depend on technological performance. For collective action problems such as climate change, solutions will require financial and policy innovation as well to ensure market forces advance the good of the community. The sheer technological power behind these solutions simultaneously demands that we intentionally embed human values and social accountability into every layer of technological progress.

Yet even amid such opportunities, genuine headwinds challenge our progress. The supply of domestic talent interested in engineering remains insufficient for the growth of the nation's engineering workforce, limiting our ability to solve the grand challenges that lie ahead. At the same time, public skepticism toward higher education and publicly funded research creates additional hurdles, threatening the sustainability of the innovation ecosystem that has long underpinned our nation's progress. Addressing these barriers requires purposeful advocacy for stronger STEM education, increased public scientific literacy, and deeper collaborations among academia, industry, and communities.

# 90%

of Pratt undergrads work full-time, attend graduate school full-time, or pursue a start-up after graduation

# 103%

growth in total graduate enrollment over the past decade

# 68%

growth in PhDs awarded over the past decade

# 42%

growth in total research expenditures over the past decade

# Now is the moment for Duke Engineering to lead. We are made for this.

By leveraging our strengths in interdisciplinary collaboration, responsible innovation, and intentional societal engagement, we must not only adapt to this changing landscape but actively shape its evolution.

Our ability to rise collectively to meet these challenges will define the future of engineering—and the broader society it serves.



# OUR VISION

**for a 21st Century Engineering Profession**

We believe technology, when paired with human talent, is among the most powerful forces for advancing the common good.

As scientific progress accelerates, engineers have ever-expanding opportunities to shape a better future. Highly disruptive technologies—such as artificial general intelligence (AGI), precision biologics, quantum computing, and even deep space technologies—are on our horizon.

At Duke Engineering, we are committed to advancing these technologies while preparing the next generation of leaders to apply them to society's greatest challenges from climate change to national security. If engineering exists to serve society, we must ask: What kind of society will we build?

Our vision is that of engineers boldly creating an **innovative, smart, healthy, and sustainable** society that **uplifts** all people. To deliver on that promise, engineering must strategically invest in four technological themes essential to solving the greatest societal challenges of the 21st century: **computing, materials, climate, and health** technologies.

Engineering programs should produce socially engaged technology leaders who can solve complex global challenges while advancing the common good. Duke Engineering has long led in design-based experiential learning, embedding real-world projects and stakeholder engagement across our curriculum. Our introduction of entrepreneurship training ensures students are not just inventors, but innovators willing to take risks and to maximize their impact.

Yet, we know that true transformation demands more. Our vision is to explicitly bring character development into the design of our curricular and co-curricular programs. Cultivating student virtues like perseverance, patience, courage, truthfulness, and integrity alongside deep technical expertise will produce the principled technology leaders of tomorrow.



## We view purposeful partnerships as essential to our capacity to engineer a better society.

Beyond our long-standing collaborations with industry on research and technology translation, we must forge new alliances with K-12 educators and workforce development programs to broaden access and to produce a future engineering workforce more reflective of the communities we strive to serve.

Despite its profound benefits, we also recognize a growing skepticism toward higher education. Engineering must advocate for greater public technology literacy and engage policymakers on how technology drives social progress and solves societal problems. By partnering with local communities, our students will learn to innovate in the messiness of the real world by navigating the political, economic, and ethical dimensions of their technological solutions.



# **This is the engineer's moment— and our call to action.**

By fully embracing interdisciplinary collaboration, responsible innovation, and social accountability, Duke Engineering seizes the opportunity to set a new paradigm in education, research, and translation—preparing leaders to deliver the transformative solutions the world urgently needs.

**Our vision:  
boldly creating  
smart, healthy, and  
that uplifts**

**engineers  
an innovative,  
sustainable society  
all people.**



# H SUSTA INN UP

The background is a detailed architectural drawing in a dark grey tone. It features a central arched window with intricate tracery. To the left, there's a section labeled 'EV. OF ACADE.' and 'Top of Coping level 482'6\"/>

EALTHY  
INABLE  
SMART  
VATIVE  
LIFTING

# **A healthier society depends on engineering solutions that transform care, improve outcomes, and extend well-being to all.**

Duke pioneered this vision more than 50 years ago by launching the nation's first Department of Biomedical Engineering. Today, our mission has never been more urgent or promising, with AI driving advanced diagnostics, wearable sensors streaming personalized health data, and advanced medical robotics enhancing surgical precision.

We stand at the convergence of disciplines in an era where futuristic technologies are poised to spark incredible advances in human health, where supercomputers simulate patient-specific conditions, CRISPR-based tools manipulate genomic activity, and brain-computer interfaces restore mobility and enhance mental health treatments.

Just as Duke first revolutionized health care decades ago, we're ready to expand our impact beyond the body itself. Building on breakthroughs like real-time 3D ultrasound and high-resolution optical coherence tomography, we now tackle the environments that shape well-being: from engineering healthier built spaces and microbial ecosystems to developing sustainable materials, smart sanitation systems, and wearable technologies. By addressing health at every scale, we ensure that the world we live, work, and play in becomes part of the solution.

Proximity matters. With one of the world's leading medical schools steps away and deep partnerships spanning discovery, translation, and entrepreneurship, Duke Engineering maintains a proven pipeline moving ideas swiftly from concept to clinical impact.

Upholding a modern Hippocratic ethos, our students learn within a robust ethical framework. They develop listening, communication, and empathy skills to ensure that every innovation serves individuals and communities equitably.

Addressing the complexity of the human body demands sophisticated, interdisciplinary approaches. At Duke Engineering, we unite students and faculty from engineering, medicine, nursing, environmental science, policy, and business—in classrooms, clinics, and the field—to engineer a healthier future for all.

**1<sup>st</sup>**

BME department  
in the country

**20+**

companies founded by  
current BME faculty

**#3**

BME undergrad  
program (*U.S. News*)

## Where Clinical Needs Get Met

Interdisciplinary teams of graduate students from engineering, medicine, nursing, and business shadow clinicians to uncover unmet challenges. Through **Design Health**, they then design, prototype, and test solutions alongside industry partners to ensure new technologies address real-world needs.

*Below: Professor Cameron McIntyre is developing augmented reality technology that gives neurosurgeons patient-specific, multifaceted, 3D brain models to better plan complex procedures.*

## Work Smarter, Not Harder

The **Duke Center for Computational and Digital Health Innovation** powers the research behind tomorrow's clinical tools, from AI-driven wearable health monitors that flag early warning signs to virtual-reality platforms for surgical rehearsal.

*Right: Professor Amanda Randles is engineering supercomputer-powered simulations of patient-specific vascular systems to inform surgical decisions, predict cancer metastasis, and anticipate heart problems before they occur using wearable technologies.*





## Engineering Healthier Human Habitats

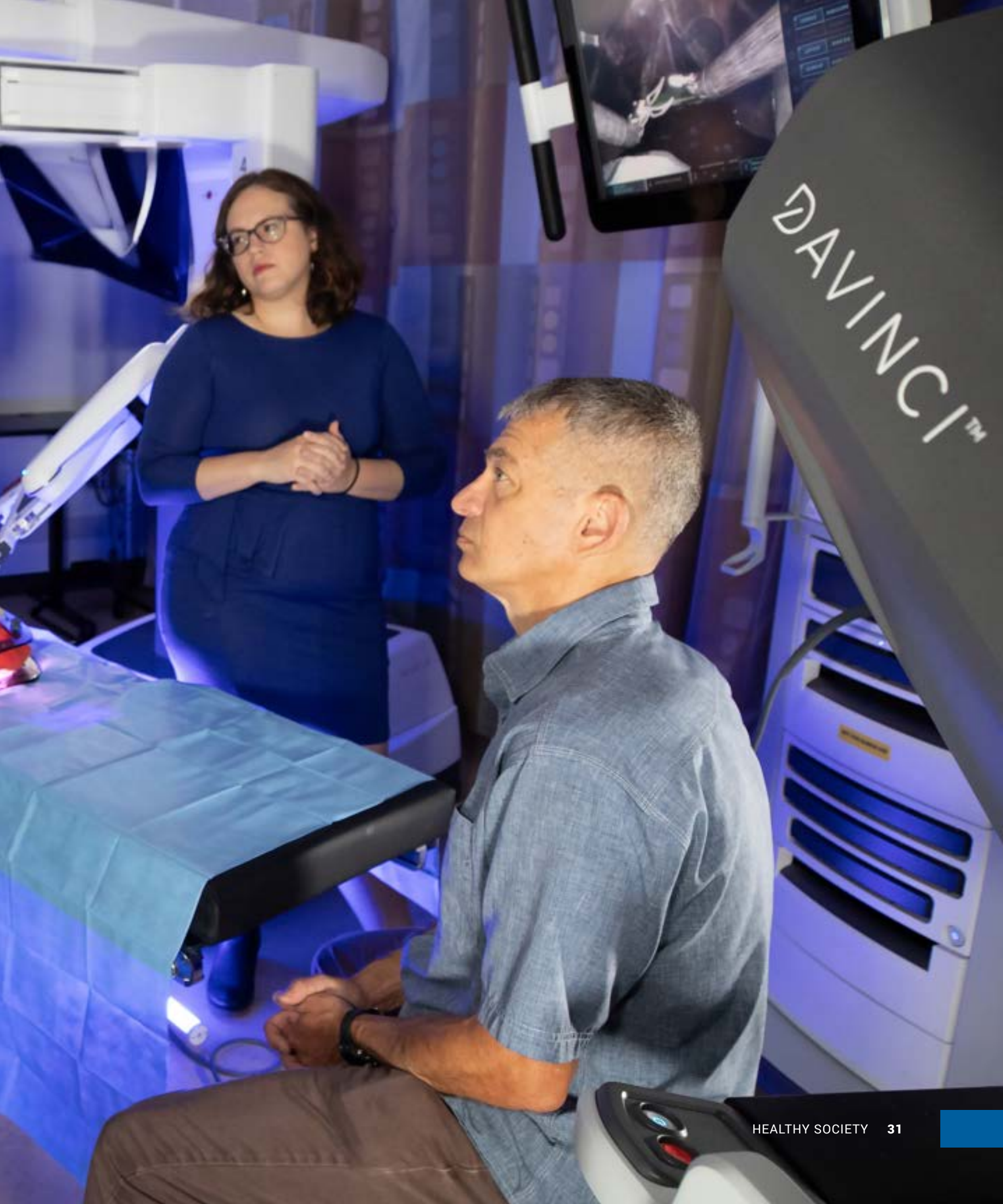
The **NSF Precision Microbiome Engineering Research Center (PreMiEr)** develops diagnostic tools and building technologies that foster beneficial microbial communities while preventing harmful pathogens—redefining the environments where we live, work, and play.



## Precision Robotics

The **Traineeship for the Advancement of Surgical Technology (TAST)** recruits graduate students across engineering and computer science to design next-generation surgical robots addressing provider, patient, and societal needs through hands-on prototyping and testing in convergent teams.

*Spread: An interdisciplinary group of doctors and engineers works to develop surgical robotics techniques and technologies using lifelike models of human anatomy and a da Vinci Surgical System.*



DAVINCI™

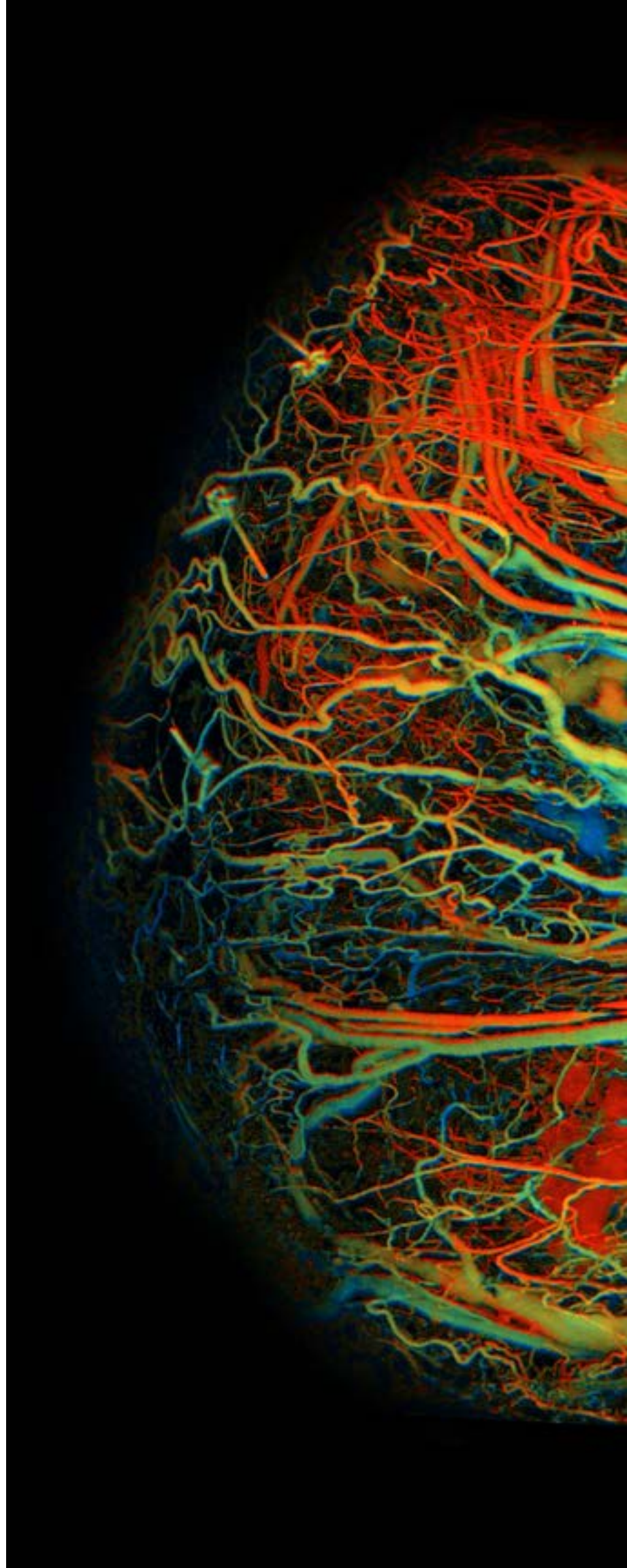
## Visionary Health Care

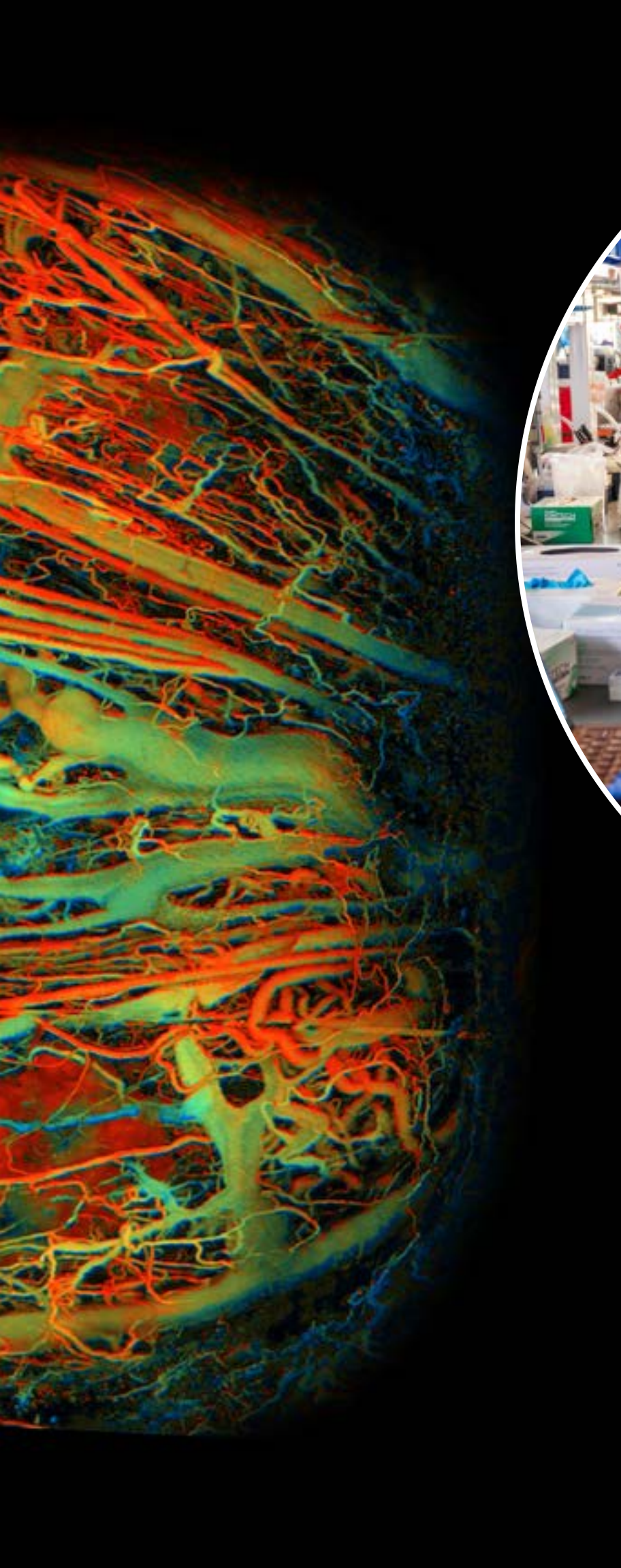
It's difficult for doctors to treat what they can't see, and for over half a century, Duke has been an international linchpin for medical imaging research. From bringing real-time and 3D ultrasound imaging into clinical practice to revolutionizing **optical coherence tomography (OCT)** to guide eye diagnostics and surgery, our researchers have always had an ambitious view of the field's future. Adding to these continually growing portfolios, we're now pursuing photoacoustic tomography—ultrasound waves created by light penetrating deep within tissues—to provide transformative insights into the human body.

*Right: A deep, multifaceted view of a growing mouse embryo is providing Duke researchers with novel insights into how placentas develop and grow throughout a pregnancy.*

## Early Autism Intervention

Early diagnosis is the most important component to helping autistic children thrive as they grow, but the specialists required are often overbooked or unavailable in certain areas. Duke engineers developed **SenseToKnow**, a tablet-based, 10-minute app that can accurately screen for autism in children by automatically detecting a wide range of behavioral characteristics.





## The Human Genome, Unleashed

The **Center for Advanced Genomic Technologies (CAGT)** brings engineers, scientists, and clinicians together to harness CRISPR and epigenomic profiling, streamlining drug-target discovery and unlocking new treatments.

The background is a dark, monochromatic architectural drawing. It features various elements of classical and Gothic architecture, including columns, arches, and intricate tracery. Faint text from the drawing is visible, such as 'SECTION TH' and 'ARCADE' on the left, and 'SECTION' at the bottom center. The overall tone is professional and academic.

**SUSTA**

**INNO  
UP**



EALTHY  
INABLE  
SMART  
VATIVE  
LIFTING

# This is a moment of possibility.

A more resilient, sustainable planet depends on engineering solutions that meet the demands of a growing population and a resource-constrained world. Whether transforming renewable energy, pioneering carbon capture technologies, or designing circular economic solutions to build a healthier planet, Duke Engineering can leverage this moment to lead transformational change across scientific fields, industries, and communities.

Building on a century of innovation in foundational areas like geomechanics, computational modeling, and environmental systems, we're developing new human-centered technologies to shape a sustainable future. At Duke, we're focused on technologies that strengthen ecosystems, serve communities, and protect the planet's future.

This includes work in developing a sustainable power grid and advancing next-generation carbon capture and conversion technologies. We're also designing smarter infrastructure using digital twin modeling and supporting student- and faculty-led ventures that strengthen local communities, promote shared prosperity, and foster sustainable economic growth.

These efforts grow stronger through collaboration with faculty across disciplines, policy leaders, industry partners, and local communities. Together, we're turning promising ideas into progress that lasts and that matters to the people and places it reaches.

We also know that preparing future engineers requires more than technical know-how. Our students graduate with climate fluency, a strong ethical compass, and the ability to work across fields and cultures. Through hands-on experience, they develop the confidence and context to turn complexity into clarity—and ideas into real impact—hallmarks of a Duke education.

At Duke Engineering, we're investing in people, partnerships, and research to help society imagine—and realize—a sustainable future. And we're doing it in ways that are smart, inclusive, and built to last.

**100%**

carbon neutral  
university-wide  
in 2024

**35%**

faculty growth  
in CEE over the  
past five years

**330**

climate and  
sustainability courses  
offered at Duke



## Industry Needed Solutions. Duke Delivered.

Leaders from industries as diverse as insurance and manufacturing share a common need—graduates prepared to tackle sustainability in practical ways. In response, we built the **Master of Climate and Sustainability Engineering** program.

From student-launched startups developing “Fitbit-style” sensors for coastal water health to innovative ideas like turning car lots into productive solar energy sites, students master how to run and scale ventures built around social, economic, and

environmental impact. They learn to design triple-bottom-line businesses that consider not just clients, but also communities. They learn to navigate policy, secure financing, and communicate clearly whether with technical experts, stakeholders, or the general public—equipping them to drive sustainable change across industries.

*Above: Students visit oyster farmers on North Carolina’s coast to better understand the challenges facing their businesses and communities. Meeting people where they are to get a full picture of how potential solutions could influence a business’s impact is a hallmark of Duke’s Design Climate program.*



## Local Commitment, Global Impact.

The **New York Climate Exchange** is a \$700 million living-learning hub for environmental solutions—and Duke is proud to be part of it. As a coastal state, North Carolina knows firsthand the challenges of climate change. That perspective drives our commitment to this ambitious, action-oriented partnership.

Together with researchers, policymakers, industry experts, and community leaders around the world, we're working to accelerate climate innovation across disciplines and regions. By keeping accessibility and inclusion at the heart of the effort, we're building solutions that serve communities everywhere.



*Left: An architectural rendering of the proposed New York Climate Exchange campus on Governors Island outside of New York City.*



## It Takes an Interdisciplinary Village

Engineering a more resilient, sustainable planet requires innovation and collaborations across all disciplines. That's why we recently invested in a cluster hire of faculty across all departments with the singular goal of attacking this opportunity from multiple angles. These are just a few examples of how our newest programs are tackling sustainability head-on.

Imagine materials so intricately structured that unfolding the microscopic internal spaces of a single gram could cover a football field. Professor **Liang Feng**'s innovative methods of capturing and storing gases through artificial molecular machinery demonstrate the kind of bold thinking that defines Duke Engineering.



Everyday consumer habits profoundly impact our environment—from water quality to climate stability. Instead of resisting consumerism altogether, Professor **Leanne Gilbertson** tackles sustainability directly. She reimagines product lifecycles, making products smarter from the start—designing them to last longer, perform better, and be reclaimed rather than discarded.

Wastewater treatment might not capture headlines, but Professor **Jeseth Delgado Vela** understands its pivotal role in global sustainability and public health. She investigates how microbial communities eliminate contaminants, harnessing technology to develop smarter, safer wastewater management systems—improving environmental outcomes and human health worldwide.



## Insuring the Future of Communities

As climate events grow more frequent and severe, insurance companies are retreating from high-risk regions—often communities that need help the most.

Duke's **Center for Innovation in Risk, Catastrophes, and Decisions (CIRCAD)** partners with industry and policymakers to rethink insurance and risk strategies. We create models that protect vulnerable communities, ensuring insurance remains accessible to everyone, everywhere.

*Above: In 2024, Hurricane Helene devastated communities large and small across the mountains of western North Carolina, underscoring the need to develop new community-sized insurance models to incentivize large-scale mitigation efforts.*

## Teams Built for Global Impact

Solving global challenges with international companies might intimidate some, but our students embrace it at Duke. Interdisciplinary teams engage annually in ambitious, multi-year projects aimed at solving challenges posed by various XPRIZE competitions. Whether mapping ocean floors or documenting rainforest biodiversity through autonomous drones, students gain hands-on skills, teamwork experience, and global exposure—proving there's no limit to what we can achieve together.

*This page: Students from across Duke's campus deploy their autonomous drone system designed to catalogue biodiversity deep in unforgiving jungles during the XPRIZE Rainforest semifinals held in Singapore.*



The background is a detailed architectural drawing in a dark grey tone. It features various sections of a building, including a large arched window with intricate tracery on the right, and a section labeled 'SECTION THRU ARCADE' on the left. The drawing shows structural elements like columns, arches, and rooflines with fine lines and hatching for shading.

# THE SUSTAINABLE

# INNOCENT UP



EALTHY

INABLE

SMART

VATIVE

LIFTING

# **We stand at a historic inflection point with AI breakthroughs, quantum computing, and next-generation hardware on the horizon.**

Duke Engineering's decades-long expertise and full-stack research facilities position us at the forefront of this revolution.

Building on our legacy in high-performance computing and distributed systems, we bring together world-class teams in neuromorphic computing, quantum engineering, cloud infrastructures, and AI-enabled hardware. Together, we create intelligent, adaptive, energy-efficient, and secure platforms that will power tomorrow's industries and communities.

Our research is supported by cutting-edge resources, such as cryo-electron microscopes for quantum material studies and dedicated fiber-optic testbeds for future communication networks. These advanced facilities attract collaborations with academia and industry, bridging discoveries from lab to application.

With great computational power comes even greater responsibility. Duke's strengths in liberal arts, law, ethics, and policy ensure our technologies remain secure, equitable, and ethically grounded. Campus-wide initiatives empower our students to deploy AI and computing advances responsibly.

Our graduates enter leadership roles fluent in AI and quantum technologies, equipped to address security threats and anticipate societal impacts. Our curriculum prepares them to harness computational power effectively and ethically.

Duke Engineering is committed to investing in people, partnerships, and curricula to create a smarter, more connected future that benefits all of humanity.

**35%**

growth in ECE  
research expenditures  
since 2016

**20**

faculty members  
who are  
IEEE fellows

**\$250M**

in funding for members  
of the Duke Quantum  
Center since 2005



## Quantum Collaboration, Unlimited Possibilities

The **Duke Quantum Center (DQC)** convenes researchers across disciplines to tackle real-world challenges with quantum computing and quantum simulators. Backed by over \$250 million in collaborative funding, it's

training the next generation of quantum experts and yielding breakthroughs today.

*Above: Several leading quantum labs, like Professor Huanqian Loh's, shown, are pursuing a powerful 256-qubit quantum computer that will serve as a platform for global discovery.*

*New robotics faculty  
Joanna Deaton Bertram,  
Boyuan Chen,  
and Xianyi Cheng*



## Robotics and Automation

Recent investments into robotics facilities and the thought leaders to harness their transformative power has Duke positioned to shape the future of human-robot teaming and surgical practice. Our **Master of Engineering in Robotics & Autonomy** program provides students with a solid foundation to immediately enter industry positions as full-stack roboticists.

*Below: Postdoctoral researcher Boxi Xia works on the second iteration of the Duke Humanoid, an open-source 10-degrees-of-freedom humanoid, as an extensible platform for locomotion research.*



# Computing on the Edge of Tomorrow

The **NSF AI Institute for Edge Computing (Athena)** develops AI-driven solutions that leverage emerging communications networks. Athena is redefining how devices compute, communicate, and serve users at the edge by uniting engineers, statisticians, legal scholars, and psychologists from nine universities.

*Spread: Researchers in Athena are pursuing futuristic robotic platforms capable of exploring dangerous situations and landscapes to aid search-and-rescue and disaster mitigation efforts.*





# Data Mining New Materials

Duke's **AI + Materials Master of Engineering** program trains graduate students at the intersection of AI and materials science to design novel materials—from ultra-durable carbides to targeted biologics—transforming discovery into data-driven recipes that unlock entirely new classes of engineered substances.



## Advanced Fabrication Facilities

The **Shared Materials Instrumentation Facility (SMIF)** offers Duke, and external researchers and educators, access to cleanroom fabrication capabilities and advanced characterization imaging to fuel innovation through shared, cost-effective resources.

*Left: Duke recently installed a multimillion-dollar scanning transmission electron microscope to support the school's growing research portfolio into quantum and energy-focused materials.*



## Turning Chatbots into TAs

Led by Professor Jon Reifschneider, the **Center for Research and Engineering of AI Technology in Education (CREATE)** pilots AI-driven teaching assistants and learning tools within Duke and beyond to scale innovations that enhance instruction and student success.

The background is a detailed architectural drawing in a dark grey tone. It features various sections of a building, including a large arched window with intricate tracery on the right, and several columns and arches on the left. The drawing is technical, with fine lines and some handwritten-style annotations. The text 'SECTION THRU ARCADE' is visible on the left side, and 'SECTION' appears at the bottom center.

HH  
SUSTA

INNO  
UP



EALTHY  
INABLE  
SMART  
VATIVE  
LIFTING

# **We embrace innovation to redefine the future of learning, discovery, and design.**

Engineers at Duke drive technologies to their fullest potential through creativity, interdisciplinary collaboration, and responsible entrepreneurship throughout every level of our school.

Our curriculum integrates real-world innovation through community-based design projects and industry-informed challenges. Entrepreneurial training and support in start-up incubation, intellectual property strategy, and technology transfer empower students and faculty alike to turn bold ideas into thriving ventures.

These signature experiences prepare our graduates and their mentors to address pressing problems using advanced tools such as generative AI and sophisticated decision analysis. Duke engineers learn to translate ingenious ideas into impactful solutions.

Partnerships amplify our impact. Collaborations with experts across business, law, and policy ensure our solutions resonate with society. Strategic alliances with equally ambitious and like-minded companies, military programs, and research institutions guarantee our training and efforts align with emerging workforce needs across sectors.

At Duke Engineering, technical mastery goes hand-in-hand with developing strong character, clear communication skills, ethical decision-making, and collaborative leadership.

By cultivating curiosity and a passion for continuous learning, we ensure our community members are prepared to drive meaningful and responsible innovation throughout their careers.

**#5**

among top 25 U.S.  
engineering schools  
in per-faculty research  
expenditures

**2**

Pratt start-ups  
have gone public  
since 2020:  
IonQ and 374Water

**98+40**

new invention  
disclosures  
and patents issued  
in FY25 alone

# Technology to Products, Innovators to Founders

The **Christensen Family Center for Innovation (CFCI)** cultivates useful products and visionary founders, fueling a thriving technology venture pipeline. Whether it's a student seeking hands-on experience,

an emerging entrepreneur with a bold concept, or a seasoned professional mentoring tomorrow's leaders, CFCI provides the ideal platform to transform ideas into reality.

## Launching Entrepreneurs Before Graduation

With a suite of classes focused on design thinking and a vast array of entrepreneurial support systems, we are helping undergraduates form successful startups even before they leave campus. **QuikCal**, a software product designed to streamline construction site deliveries, began as a first-year design project that was acquired before its creators earned their bachelor's.

And a trio of senior design students recently raised tens of millions of dollars for their startup **Protect3d**, which creates individually tailored braces, splints, and pads for the world's best athletes.

*Below: Kevin Gehsmann, one of the three Duke undergraduate founders of Protect3d, takes Dr. Kent Ellington of OrthoCarolina through the company's design process for bespoke orthopedic and protective equipment.*



# Engineering Design From Day One

**First-Year Design** immerses undergraduates in client-driven challenges, guiding multidisciplinary teams to prototype solutions that have gone on to secure patents, compete globally, and even launch start-ups before graduation.



## From Main Street to Wall Street

Since 2020, two companies launched by Duke Engineering faculty and their research have gone public. **IonQ**, the first pure-play publicly traded quantum computing company, and **374Water**, a novel, modular approach to treating waste and destroying “forever chemicals,” demonstrate our acumen for getting investors to back our innovations.

*Right: IonQ founders Jungsang Kim (left) and Christopher Monroe (right) headline a growing lineup of quantum computing experts at Duke working to make this potentially transformative technology a reality.*





## A Biomedical Pipeline

Duke Engineering's proximity to one of the world's leading research hospitals ensures our lab work has every opportunity to impact human health. Since 2006, Duke's collaboration with the **Wallace H. Coulter Foundation** has accelerated bioengineering breakthroughs, turning \$15 million in grants into \$1.24 billion in follow-on funding and

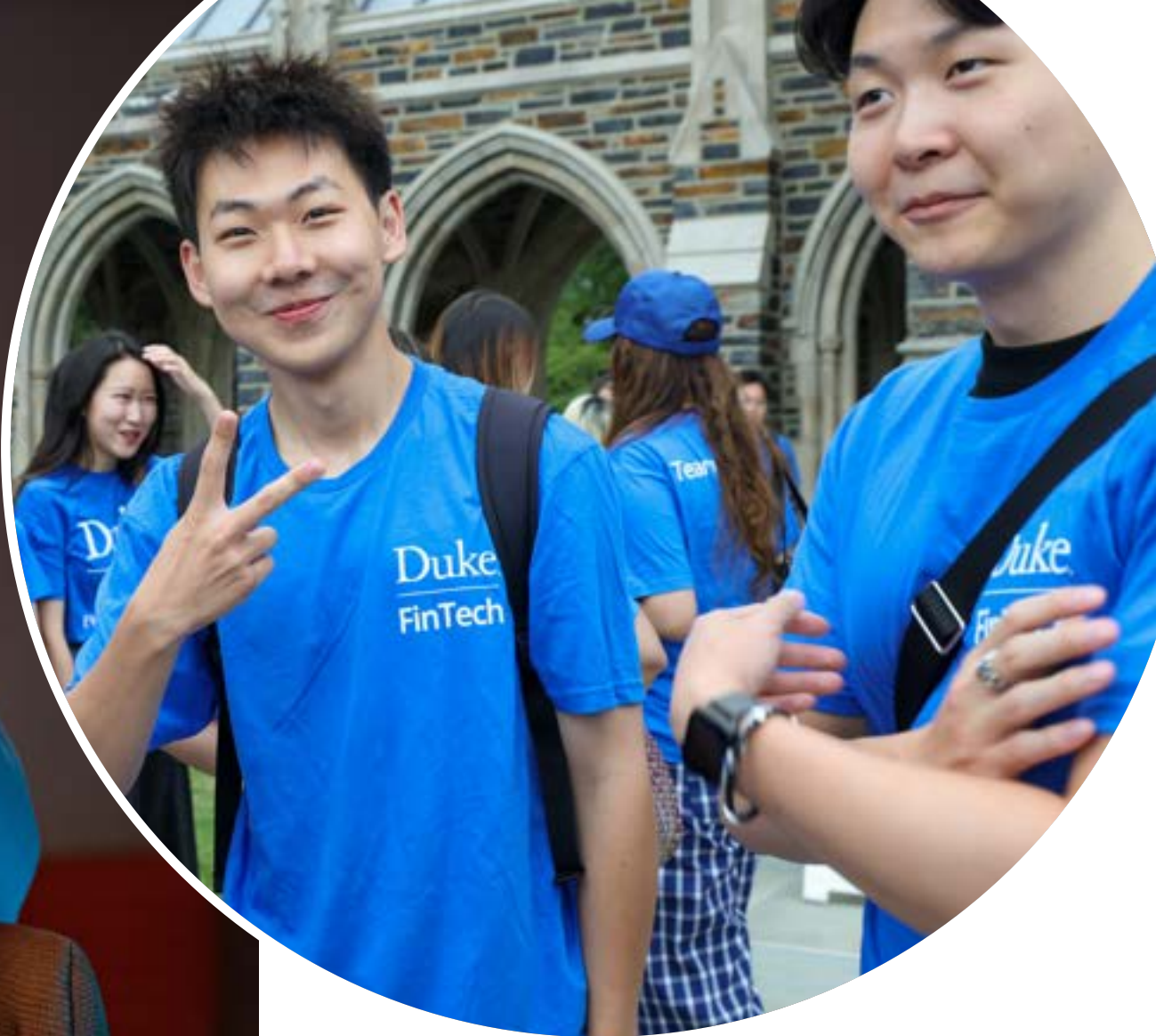
launching 17 companies that bring life-changing therapies to market. In the last year alone, biopharmaceutical manufacturing startup Isolere Bio was acquired by Donaldson Company, and CRISPR-based epigenome-editing startup Tune Therapeutics completed over \$175 million in Series B financing.

# Advanced Degrees Designed for Impact

Working hand-in-hand with industry leaders and guided by emerging trends, Duke Engineering has crafted a suite of master's programs that are unmistakably Duke. From **AI** and **cybersecurity** to **fintech**, **game development**, and **robotics and autonomy**, we marry deep technical expertise with business acumen across a broad spectrum of future-focused disciplines.

*This page: Members of Duke's Master of Game Design, Development, & Innovation program learn to translate technologies and concepts used in entertainment platforms to other impactful arenas such as surgery and education.*

*Right: Students in Duke's Master of Financial Technology program learn to harness emerging technologies like AI, machine learning, and blockchain to drive advances across the financial sector.*



## Looking Beyond the Horizon

At Duke Engineering, we're betting on our own ingenuity by funding interdisciplinary teams pursuing high-risk, high-reward projects with potential for deeply transformative societal impact. And it's working. Two teams have already received federal follow-on funding: one pursuing naturally occurring biological condensates, like drops of oil forming in water, to engineer new therapeutics and a second focused on designing energy-efficient hardware to power AI applications.

The background is a dark, monochromatic architectural drawing. It features various elements of classical and Gothic architecture, including columns, arches, and intricate tracery. On the left side, there is a section labeled "SECTION THRU ARCADE". On the right side, there is a section labeled "SECTION". The overall style is that of a technical architectural drawing, possibly a cross-section or a detailed elevation of a building.

H  
SUSTA

INNNO

UP

The background is a detailed architectural drawing, likely a cross-section or elevation of a building's interior. It features a large, ornate archway with intricate tracery. Various labels and dimensions are visible, such as "ELEV. OF ARCADE", "Top of Coping level 482'6\"", "Copper gutter", "Copper flashing", "Akonstath", "OUTSIDE INSIDE", "9 1/2' MUL", and "PLAN". The drawing is rendered in a light, sketchy style with fine lines and some shading.

EALTHY  
INABLE  
SMART  
VATIVE  
LIFTING

# **We are committed to uplifting every community through inclusive engineering.**

A society where no one is left behind requires pathways to economic opportunity, social connection, and human dignity. By harnessing our global network of partners, Duke Engineering ensures these pathways remain open and accessible to everyone.

For over a century, Duke has championed knowledge in service of society. Today, we meet people where they are, creating routes to prosperity through active learning, entrepreneurial ventures, and community-driven research.

Locally, we strengthen North Carolina's STEM pipeline through outreach education, empower innovators to launch forward-looking enterprises, and engage residents directly in research projects shaping their hometowns. Globally, we engineer affordable medical devices for low-resource settings, design culturally informed sanitation systems, and foster sustainable development in collaboration with international universities and industry.

Cultivating an inclusive society requires engineers who are not only technically proficient but also culturally insightful. Duke's unique strengths in the liberal arts and humanities provide fertile ground for developing leaders grounded in history, philosophy, economics, and sociology.

Harnessing these interdisciplinary ties, we embed ethical principles in our classrooms and expose students to diverse cultures through experiential learning. Engineering solutions that are technically effective, socially responsible, and economically viable is not merely good practice—it is how we create lasting impact.

Building a better world at Duke Engineering is not merely aspirational—it is already underway. Our commitment to people, programs, and partnerships is evidenced by numerous initiatives demonstrating that uplifting society is achievable and ongoing.

**5,000+**

K-12 students served  
in Pratt programs  
in FY2025

**>50%**

of undergraduates  
volunteer in the U.S.  
or abroad

**12.5%**

of undergraduates  
take part in a service-  
learning course

# Engineering in Service to Society

Duke Engineering strengthens local and global connections through community-engaged research, transformative learning, and impactful STEM outreach. We've dedicated staff and resources through

**Community-Based Innovation** to engage our neighbors in co-designing research and outreach opportunities, co-creating solutions to today's grand challenges.



# Immersing Tomorrow's Innovators in Design

**Outreach Design Education (ODE)** expands access to hands-on design learning for students from underserved communities. Through collaborative projects and local partnerships, the program introduces real-world STEM challenges, builds practical skills, and sparks curiosity. By bringing

design education into middle and high school classrooms, we help students envision and create the innovations of tomorrow.

*Spread: Led by Professor Aaron Kyle (left), students from local high schools get a hands-on crash course in design learning inside the same facilities that support our signature first-year design experience.*



# Cultivating Engineers of Integrity

At Duke Engineering, we don't leave character development to chance. Through our **Character Forward Initiative**, we embed intentional lessons in ethics, empathy, and leadership across both courses and co-curricular experiences ensuring graduates emerge as skilled innovators and thoughtful, responsible citizens.

*This page: Created by Duke Engineering alumnus Joe Coates, "Lady Justice" is a public art piece that looks over downtown Durham, North Carolina, as a reminder of our commitment to helping underserved segments of our community.*





## Changing the World, One Flush at a Time

Nearly half the world—3.6 billion people—lack reliable access to safe sanitation. Addressing this challenge requires solutions tuned to local economics, cultural norms, and environmental conditions. Backed by the Bill & Melinda Gates Foundation, the **Center for Water, Sanitation,**

**Hygiene, and Infectious Disease (WaSH-AID)** designs and pilots treatment systems for blackwater, greywater, and stormwater. The center also develops wastewater-based health monitoring tools bringing affordable, effective sanitation and disease surveillance to regions that need it most.

## Innovate with Compassion, Deliver with Impact

Since its founding, the **Center for Global Women's Health Technologies (GWHT)** has driven breakthroughs in cervical and breast cancer care, developing diagnostics, prevention tools, and treatments that reach

women wherever they live. By placing women's needs at the heart of each solution, we build sustainable ecosystems of change that advance global health equity and amplify impact.



# Engineering Solutions, Empowering Communities

Each year, student-led teams travel around the globe to collaborate with local partners identifying critical needs, co-designing solutions, and implementing projects in the field.

**Duke Engineers for International Development (DEID)** is an immersive program that builds real-world experience and a sense of global responsibility, preparing engineers to drive positive change worldwide.







SECTION  
THRU  
ARCADE

# PRIOR IN

SECTION

The background is a detailed architectural drawing of a building's exterior, featuring a large arched window and a smaller arched entrance. The drawing includes various labels such as "ELEV. OF ARCADE", "Top of Coping level 482'6\"", "Copper roof", "Copper gutter", "Copper flashing", "Outside", "Inside", "PLAN", and "9 1/2' MUL". The drawing is rendered in a dark, muted color scheme, with the main title overlaid in large, bold, white letters.

# RITIES ACTION

# What comes next is already taking shape.

At Duke Engineering, the pace of progress is unmistakable. Faculty are pushing boundaries in emerging fields with the potential to reshape lives. Students are turning ideas into action—launching ventures, leading design teams, and working in communities near and far. Alumni are re-engaging with purpose, offering mentorship, opening doors, and helping us to extend our reach.

We've laid out a vision that reflects who we are and where we're headed—bold in ambition, grounded in values, and ready for what's next.

This is our time to move from vision to reality. Not just to imagine a smarter, healthier, more just society—but to build it.

Together, we are **MADE FOR THIS**.

Our strategic vision comes to life through focused, measurable action. The following priorities connect this vision to the next phase: Pratt 2039. Each reflects our commitment to progress that is interdisciplinary, inclusive, and built to last.

## **Theme 1: Accelerate High-Impact Research**

We will amplify ideas with the greatest potential to transform society. That includes scaling what works, investing in promising frontiers like AI and quantum, and aligning research with the world's most pressing challenges. From climate to health to national security, we will lead with purpose.

## **Theme 2: Redefine the Educational Experience**

We will integrate experiential learning across every level, from first-year classrooms to doctoral training. Master's programs will evolve as career-focused platforms rooted in ethics, leadership, and innovation. Students will leave Duke prepared to navigate complexity and drive change.

## **Theme 3: Lead Through Inclusive Excellence**

We will foster a culture where all members of our community have the opportunity to thrive. That means creating learning environments that reflect a range of perspectives, designing teaching practices that support all students, and holding ourselves accountable to the values of fairness, respect, and opportunity. Belonging and excellence go hand in hand—and we lead with both.

## **Theme 4: Expand Alumni as Partners**

We will deepen alumni engagement through mentorship, storytelling, and shared learning experiences. Whether shaping the curriculum or opening doors to new opportunities, our alumni will help power our progress and expand our reach.

## **Theme 5: Strengthen Industry Relationships**

We will build stronger partnerships with industry through co-developed research, embedded mentorship, lifelong learning opportunities, and shared innovation. These connections will strengthen our programs and ensure our graduates are workforce-ready and globally minded.

## **Theme 6: Build a Thriving Community**

We will invest in the people that make Duke Engineering extraordinary. That includes professional development, operational clarity, transparent career pathways, and better systems for collaboration. A stronger workplace leads to stronger outcomes.

## **Theme 7: Shape Our Physical and Virtual Campus**

We will create flexible, future-ready spaces that support learning, research, and community. From the renovation of Hudson Hall to digital platforms for collaboration and discovery, we're making it easier to connect, innovate, and build—wherever we are.

## **Theme 8: Extend Global Reach and Reputation**

We will champion global talent, foster cross-border partnerships, and share the story of Duke Engineering in powerful ways. We will scale our influence and impact through strategic communications, international visibility, and a commitment to openness.

# Everyone has a role to play.

This vision is not a checklist.  
It's a shared commitment.

Bringing it to life will take everyone in our community  
—faculty, staff, students, alumni, and partners—  
contributing their expertise, creativity, and focus.

Whether you're teaching in the classroom, leading  
research, mentoring a student, or supporting  
operations behind the scenes, your work matters.

The challenges ahead are real.  
So is our opportunity to share what comes next.

And at Duke Engineering,  
we don't just imagine what's possible.

We engineer it.

SECTION  
THRU  
ARCADE

SECTION

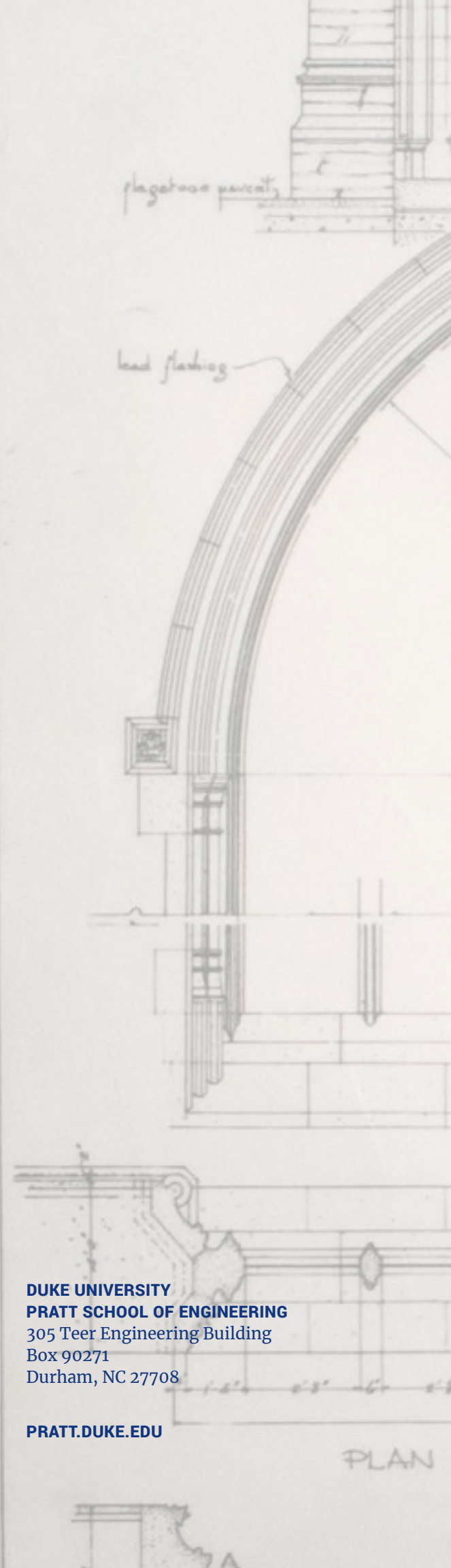
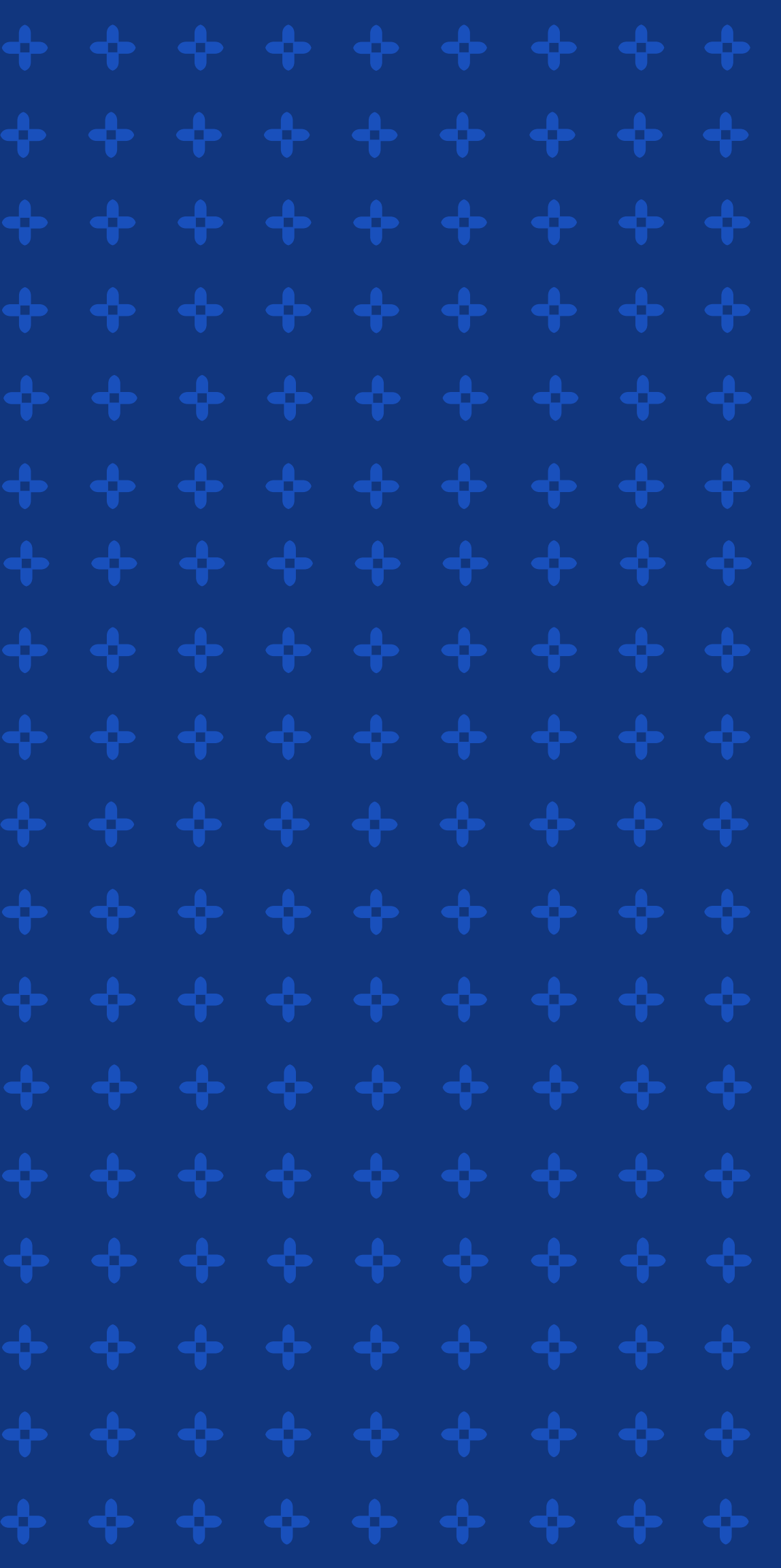
PLAN

TRIFORIUM

SECTION

205 TO 210, 214 TO 216, 218 TO 220

224 TO 229



**DUKE UNIVERSITY**  
**PRATT SCHOOL OF ENGINEERING**  
305 Teer Engineering Building  
Box 90271  
Durham, NC 27708

**PRATT.DUKE.EDU**

PLAN

SECTION  
THRU  
ARCADE

Duke

PRATT SCHOOL of  
ENGINEERING

PLAN

205 TO 210 , 214 TO 216 , 218 TO 220

224 TO 229

WINDOWS 212 - 222