

WATERLOO | SCIENCE

# FUTURE OF SCIENCE

STRATEGIC PLAN

2024-2029



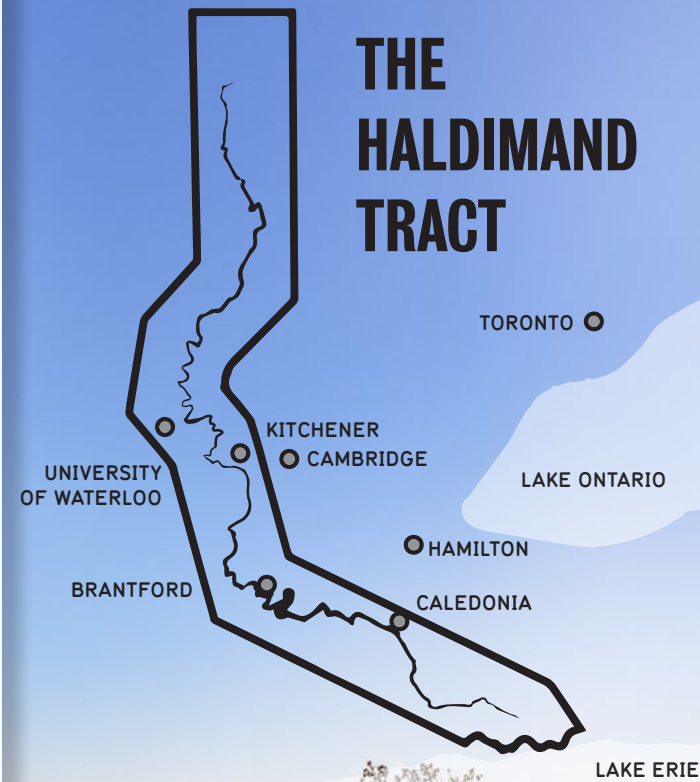
UNIVERSITY OF  
WATERLOO

FACULTY  
OF SCIENCE

# TERRITORIAL ACKNOWLEDGMENT

The University of Waterloo acknowledges that much of our work takes place on the traditional territory of the Neutral, Anishinaabeg, and Haudenosaunee peoples. Our main campus is situated on the Haldimand Tract, the land granted to the Six Nations that includes six miles on each side of the Grand River. Our active work toward reconciliation takes place across our campuses through research, learning, teaching, and community building, and is co-ordinated within the Office of Indigenous Relations.

FOR MORE INFORMATION,  
VISIT SCIENCE INDIGENOUS INITIATIVES  
[UWATERLOO.CA/SCIENCE/INDIGENOUS](http://UWATERLOO.CA/SCIENCE/INDIGENOUS)



# DEAN'S MESSAGE

This strategic plan is the culmination of a year of work that included a lot of listening. We knew that for this plan to be successful, we needed to hear from our community and learn what they saw as the Future of Science at Waterloo. Faculty, staff, students, alumni, university leaders, and engaged community members were consulted and these sessions were instrumental in creating this plan.

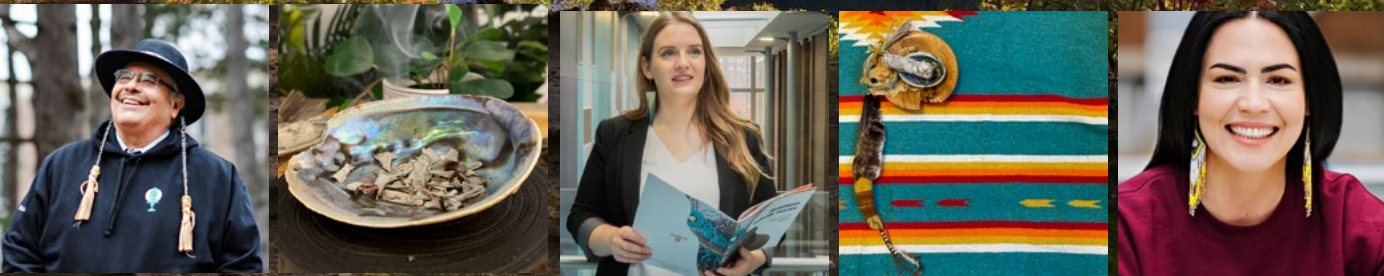


Once we knew what our community wanted for the Future of Science, our Strategic Planning Executive Committee (SPEC) and our planning partner KPMG got to work on bringing it all together. The final product aligns with the needs and desires of our community, paving the way for a successful future for Science at Waterloo and unlocking our full potential.

The plan prioritizes innovative teaching and learning, world-class research, and building an exceptional community experience. Exploratory research, modern teaching practices, and creating a Science community where everyone has a place will be a focus. We will invest in talent, create an environment where ideas can thrive, and share our successes with the world. We want Science at Waterloo to be the destination for scientists to work and learn.

I am proud to share this plan with you and begin working toward these ambitious goals to make the Future of Science a reality.

**CHRIS HOUSER**  
DEAN, FACULTY OF SCIENCE  
UNIVERSITY OF WATERLOO



EXECUTIVE SUMMARY

# FUTURE OF SCIENCE

Science at Waterloo is a global leader in research that pushes the boundaries of knowledge and imagination. From black holes and quantum computing, to ensuring the health of our great lakes, or creating new materials, medications and vision care, our research leads to disruptive innovations that will ensure a healthy and sustainable future.

The Future of Science strategic plan is designed to drive the Faculty of Science at the University of Waterloo towards its vision by enhancing teaching and learning, advancing world-class research, and providing an exceptional community experience.

The Faculty of Science is committed to advancing excellence in education and research through a strategic framework focused on key areas of development and impact. Our research and academic strategy is anchored by four transformative pillars: Health and Biomedical Sciences, Environment and Ecology, Sustainable Materials and Sensing, and Discovery and Exploration.

This framework is designed to ensure the continuous growth and success of our community, including students, researchers, staff, faculty, and alumni.

The Future of Science strategic plan supports the Waterloo at 100 vision to lead in creating equitable, resilient, and future-proofed communities, ensuring that our contributions have a meaningful impact across all dimensions of global progress.



# VISION

Advancing society through scientific discovery and innovation.

# MISSION

To lead in learning and discovery by fostering an inclusive environment that pushes boundaries through curiosity and leverages different perspectives to magnify our impact.



# VALUES

These values are the fundamental beliefs that underpin the Faculty of Science's culture and behaviour.



## COLLABORATION

We inspire, motivate, and guide each other to shape the Future of Science. We accept the different goals and needs of others, support each other in achieving these goals, and recognize achievement in all its forms.

## INCLUSION

We are a Faculty where all individuals feel respected, accepted, and are able to access a full spectrum of opportunities. We strive to promote open dialogue and learn from our differences.

## LEADERSHIP

We push boundaries in all that we do. Our actions set an example within our local communities and around the world.

## CURIOSITY

We are inquisitive and passionate about scientific discovery, encouraging the Faculty and its community to be creative, explore the unknown, and take risks in the pursuit of new knowledge.

# CATALYSTS

Catalysts are the resources, capabilities, and conditions that allow the Faculty of Science to effectively implement its strategic plan and achieve its goals.

## USING DATA FOR DECISION-MAKING

We will improve data collection and coordination with the University of Waterloo to improve the Faculty of Science's ability to track progress made towards meeting its strategic planning goals.

## BUILDING CONNECTIONS

We will deploy supports and model a culture that encourages collaboration within and outside the Faculty of Science. We will be interdisciplinary leaders that build connections within the University of Waterloo in alignment with the University's Global Futures and Waterloo at 100 visions.

## UPDATING PHYSICAL INFRASTRUCTURE

We will elevate the standard of physical infrastructure within the Faculty of Science by renovating and creating more spaces for cutting-edge research and education.

## COMMUNICATING OPENLY

We will maintain an open and accountable environment that advances scientific knowledge and innovation through clear and accessible communications. Our Faculty will continue to provide timely information to all members of our community.



PRIORITY A: ACADEMICS

# INNOVATIVE TEACHING AND LEARNING



We develop and apply effective teaching methodologies to facilitate learning and discovery, leveraging our diverse experiences to magnify our impact in a changing world.

Central to the Future of Science strategic plan is a focus on providing students with essential skills and fostering experiential learning. We will concentrate on refining teaching strategies and upgrading our educational spaces to make the most of our already outstanding academic programming. We are dedicated to employing pedagogical best practices to enhance teaching effectiveness. This includes the continuous evolution of teaching spaces to meet the dynamic needs of students and instructors, ensuring an optimal learning environment.

Our commitment to refining teaching strategies and upgrading educational spaces aligns seamlessly with Waterloo's vision for Economic Futures. By emphasizing practical, applicable learning and adapting our pedagogical approaches, we support life-long learning, which is crucial for upskilling and reskilling in an ever-evolving job market. This focus on evolving educational practices and spaces enhances our ability to foster innovative ecosystems

and develop talent, contributing to more equitable and resilient economies. By integrating work and learning more effectively, we align with our goal of supporting organizations and individuals in adapting to technological advancements and the changing world of work.

We are committed to providing experiential learning opportunities that allow students to apply their course curriculum and scientific skillsets in real-world contexts. This approach ensures that learning is not only theoretical, but also practical and applicable.

## GOALS

### A1

The Faculty of Science community is equipped with essential and relevant skills.

### A2

Learning is experiential and provides opportunities for all students to apply course curriculum and scientific skillsets.

### A3

Teaching is effective and employs pedagogical best practices.

### A4

Teaching spaces evolve with the needs of students and instructors.

### A5

Education is accessible to everyone within the Faculty of Science and fits the unique needs of students, researchers, staff, and community members.

## SCIENCE BY THE NUMBERS

**5,862**  
Undergraduate students

**584**  
Graduate students  
(2023-2024)

**28,247 m<sup>2</sup>**  
teaching and research labs  
Lab and field classes **145+**

**#4 IN CANADA**  
for Physical Sciences  
(2024 Times Higher Education Ranking)

**21** Undergraduate Science majors and programs

**18** Masters and Doctoral degrees

PRIORITY R: RESEARCH

# WORLD CLASS RESEARCH



We foster a vibrant research environment that is recognized worldwide for its groundbreaking discoveries and scientific contributions.

The Faculty of Science’s dedication to conducting cutting-edge research at the intersection of disciplines—such as Medical Technologies, Nanoscience and Nanotechnology, Life Sciences, Ocular Health, Laser Technology, and Pharmaceutical Sciences—complements Waterloo’s strategic focus on Health Futures. By pushing the boundaries of these fields, we will address critical issues in health and medicine in our country.

Our interdisciplinary approach to research advances technological and scientific frontiers and supports Waterloo’s mission to integrate health with technology and entrepreneurship. Our researchers will continue to develop innovative solutions that improve population health, create more sustainable community-based health systems, and respond effectively to the evolving demands of modern healthcare.

By fostering partnerships and leveraging state-of-the-art facilities, we will push the boundaries of scientific exploration while ensuring that emerging technologies are developed with a keen awareness of their cultural and societal impacts. This approach enables us to support and celebrate innovative research with greater responsibility and accountability, ensuring that our research outcomes benefit society in meaningful and impactful ways.

To attract the best research talent, we will make strategic investments aimed at improving the quality, impact, and visibility of our graduate studies and research portfolios. We will more widely celebrate and support researchers who take risks and venture into new frontiers.

## GOALS

### R1

Researchers are recognized and encouraged to take risks and explore the unknown.

### R2

Research is supported by industry, public sector, and community partners, leading to scientific output that is impactful and visible.

### R3

Research takes place in state-of-the-art facilities with resources that enable cutting-edge scientific research.

### R4

Research is interdisciplinary and collaborative.

## SCIENCE BY THE NUMBERS

# \$56M

### SCIENCE RESEARCH FUNDING



(2023/2024)

# 1 NOBEL LAUREATE

Our scientists are members of **20+** RESEARCH CENTRES AND INSTITUTES bringing together some of the best and most creative minds

**12** Canada Research Chairs **2** Canada Excellence Research Chair Laureates

PRIORITY C: COMMUNITY

# EXCEPTIONAL COMMUNITY EXPERIENCE



We cultivate an exceptional experience for all members of the Faculty of Science community where ideas can flourish and lasting relationships are built.

A place to learn, grow, and unleash your potential – that’s what the Faculty of Science wants to be for our community.

By creating an environment where people feel empowered to explore their passions, engage openly with their peers, and be their authentic selves, we will build a solid community base. Developing programs to support employees and students not only as scientists but as people, will build on that base to create a strong, supportive community where people have the tools they need to succeed. Education within the Faculty of Science will be accessible to all, addressing the unique needs of students, researchers, staff, and community members. We will strive to create an inclusive environment where everyone has the opportunity to accomplish their goals.

Faculty and staff will be brought together in ways they haven’t connected before through knowledge-sharing events and mentorship programs across departmental boundaries. To positively add to the student experience, we want to connect with our students on a more frequent basis to create lasting memories that will lead to fond memories once they are alumni.

As a member of the larger Waterloo Region community, we aim to connect with people of all ages to spark a love for science and introduce the next generation of scientists to the Faculty of Science at Waterloo.

## GOALS

### C1

The Faculty of Science nurtures a community with a sense of identity and belonging.

### C2

Staff and faculty grow personally and professionally in ways that align with their career goals and aspirations.

### C3

Faculty of Science community members have the tools to succeed and are supported with high-quality and accessible supports.

### C4

The Faculty of Science creates enduring relationships with its community.

## SCIENCE BY THE NUMBERS

**40+**  
Academic advisors

**35,000+**  
ALUMNI   
(2024)

**1,164** First-year students   
completed the Indigenous Ecological Knowledge module in Science Communications (2024)

**207** FACULTY   
**195** STAFF  
supporting research, teaching, and student experience

# HOW WE GOT HERE

In Fall 2023, the Strategic Planning Executive Committee (SPEC) was formed with members from each department and school, and KPMG was hired to lead us through the planning process. KPMG outlined a workplan designed to address our needs and help us understand our strengths, weaknesses, opportunities, and threats. The plan comprised five phases: project initiation, research and discovery, consultations, current state analysis, and strategic plan development. The consultations were the most

crucial and extensive phase and involved substantial stakeholder interactions.

Between October 2023 and June 2024, we collected 1,877 individual responses through 98 in-person and online community engagement events, including workshops, retreats, small group discussions, and online surveys. Stakeholders included undergraduate and graduate students, staff, faculty, alumni, university-level administrators, and community partners. These sessions and the feedback provided gave us direction and were crucial to the development of our final plan.

The final feedback session was an open house where we shared the nearly final versions of everything you've seen in this book. Survey data from the open house scored highly with an average of 4.4 out of 5 across the board. This feedback told us that the Science community overwhelmingly agreed that this was the plan they asked for.



# ACKNOWLEDGMENTS

## FACULTY OF SCIENCE SPEC (STRATEGIC PLANNING EXECUTIVE COMMITTEE)

- » Anca Constantinescu, Director Strategic Initiatives and Integrated Planning, Faculty of Science
- » Scott Hopkins, Professor, Chemistry
- » Chris Houser, Dean and Professor, Faculty of Science
- » Brian Kendall, Associate Professor, Earth & Environmental Sciences
- » Tom McFarlane, Clinical Lecturer, Pharmacy
- » Katie McQuaid, Associate Director, Communications and Marketing, Faculty of Science
- » Meaghan Middleton, Director of Advancement, Faculty of Science
- » Carlee Anne Montgomery, Graduate Student, Chemistry
- » Kevin Resch, Professor, Physics & Astronomy
- » Jose Santos, Undergraduate Student, Biology
- » Mark Servos, Professor, Biology
- » Mona Skuterud, Executive Officer, Faculty of Science
- » Savannah Sloat, Manager, Science Indigenous Initiatives
- » Ben Thompson, Professor, Optometry & Vision Science
- » Trish Van Berkel, Administrative Officer, Physics & Astronomy

## UNIVERSITY OF WATERLOO CENTRAL ADMINISTRATION

- » James Rush, VP, Academic and Provost
- » Jacinda Reitsma, VP, Administration & Finance
- » Charmaine Dean, VP, Research & International

- » Nenone Donaldson, VP Advancement
- » Christine McWebb, Associate VP Faculty, Planning and Policy
- » Jeff Casello, Associate VP Graduate Studies and Postdoctoral Affairs
- » Fayaz Noormohamed, Senior Director, Strategy and Implementation, Office of the President

## PARTNER INSTITUTES AND CENTRES

- » Robert Myers, Director, Perimeter Institute
- » Adrien Côté, Executive Director, Velocity
- » Sanjeev Gill, Associate VP, Innovation, WatSPEED
- » Tony La Mantia, President and CEO, Waterloo Economic Development Corporation
- » Amanda Green, Senior Advisor, Business Development, Mitacs
- » Norbert Lütkenhaus, Executive Director, Institute for Quantum Computing
- » Will Percival, Director, Waterloo Centre for Astrophysics

## KPMG CONSULTANTS

- » Sonya Gulati, Engagement Partner
- » Kyle Bernat-Riddle, Engagement Manager
- » Rafiq Habib, Engagement Consultant & Stakeholder Engagement Lead
- » Erin Howard, Intern, Management Consulting
- » Mika Chang, Intern, Management Consulting

# WHAT'S NEXT

With the launch of the strategic plan, the SPEC has completed its work and the Science Planning Committee (SPC) has been created to take over. Over the next five years, the Dean and the members of the SPC will champion the Future of Science in all aspects of the Faculty's planning.

To prepare for implementing the plan, the faculty have restructured some of the Associate Dean portfolios to enable them to lead and provide guidance during the plan's execution.

By focusing on our Catalysts of using data for decision-making, updating physical infrastructure, building connections and communicating openly, we will continue to update the Science community on how we are tracking toward our goals moving forward. Any success we have will be shared regularly. We will implement new key performance indicators, and our annual integrated planning and budgeting will ensure we remain agile, collaborative, and efficient.





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