



UNIVERSITY OF WATERLOO
FACULTY OF SCIENCE

Faculty of Science
Strategic Plan
2013-2018

September, 2013

Table of Contents

Faculty Overview	1
Background.....	2
Executive Summary	2
Scope	4
Planning Process	4
Mission and Vision	5
Priority Area: Undergraduate and Graduate Education	8
Priority Area: Basic and Applied Research.....	13
Priority Area: Facilities and Infrastructure.....	19
Priority Area: Visibility, Reputation and Community.....	24
Appendix A: Strategic Planning Executive Committee.....	29
Appendix B: Strategic Planning Retreat Attendees	30
Appendix C: Key Facts and Figures	31

List of Figures and Tables

Figure 1.) Faculty of Science sixth decade full-time equivalent (FTE) enrolment by academic year.....	31
Figure 2.) Faculty of Science sixth decade full-time equivalent (FTE) enrolment showing co-op versus regular	31
Figure 3.) Faculty of Science 2013 distribution of combined undergraduate and graduate full-time equivalent (FTE) enrolments by department/school.....	32
Figure 4.) Faculty of Science 2013 distribution of teaching involving regular appointment personnel.....	32
Figure 5.) Faculty of Science 2013 faculty member distribution by department/school	33
Figure 6.) Faculty of Science 2013 faculty member distribution by academic appointment	33
Figure 7.) Faculty of Science sixth decade research revenue by fiscal year.....	34
Table 1.) SWOT analysis presented at February, 2013 Science Planning Retreat	35

Faculty Overview

The Faculty of Science is comprised of the Departments of Biology, Chemistry, Earth and Environmental Science, and Physics and Astronomy, together with the School of Optometry and Vision Science and the School of Pharmacy. Each unit is engaged in ground-breaking research and the education of students from undergraduate or professional degrees through to graduate studies. Our professoriate includes 167 tenured or tenure-track faculty members who, along with our 28 lecturers and other dedicated teaching personnel, are involved in the delivery of nearly 500 courses to 4,688 undergraduate and 551 graduate students, all of which is supported by 162 permanent Faculty of Science staff members.

The units that make up the Faculty of Science are national leaders in their respective disciplines, recognized by external international agencies who rank them among the best in Canada.* We exemplify the University of Waterloo's commitment to fundamental discovery and dedication to experiential education by emphasizing hands-on learning in a variety of settings, along with the 34 per cent of science undergraduate students currently enrolled in co-operative education. Owing to our goal to be a model employer of co-op students, we also create approximately 40 co-op opportunities within the Faculty each term, the majority of which are research-based.

The Faculty of Science also embodies the University of Waterloo's dedication to internationalization, with 37 per cent of our graduate students and 5 per cent of our undergraduates coming to us from countries outside North America. We are proud of our successful and growing international 2+2 program that currently brings over 50 students from Chinese universities to study at Waterloo for the final two years of their undergraduate studies, thus graduating these students with degrees from both institutions. In terms of the international diversity of our faculty, in the past five years we have hired more than 40 new members, three quarters of whom trained internationally at a graduate or postdoctoral level. With these new additions, the Faculty of Science has added to its collective experience the benefit of training from leading institutions in 14 different nations, helping to create a truly international community for academic and research excellence.

* Based on QS World University Rankings 2012/13 in which the University of Waterloo ranked top 5 in Canada for Earth and Marine Sciences, Environmental Sciences, and Physics and Astronomy, and top 10 in Canada for Chemistry.

Background

The first half of the University of Waterloo's sixth decade (2007-2017) saw significant strategic growth for the Faculty of Science. During this period, our undergraduate enrolment was increased by 25 per cent, an accomplishment that nearly tripled the 9 per cent target defined in the university's Sixth Decade Plan. A major contributor to this increase was the opening of the School of Pharmacy in 2007, which now enrolls more than 400 students. In order to accommodate the School of Pharmacy, the Faculty undertook a major expansion in the form of a new downtown Kitchener campus comprised of the 122,000 sq. ft. Pharmacy building and the 68,000 sq. ft. Integrated Health Building.

Concurrent with the expansion and diversification of our teaching offerings, the Faculty of Science made considerable strides towards expanding our activity in novel research. Science has long been the leader for research activity at the University of Waterloo and, as of the 2012/13 academic year, reported total research revenues of \$69.5 million per annum, the highest of any faculty at Waterloo. The university's Sixth Decade Plan specified that faculty research revenues should be at least 50 per cent of their operating budgets; today Science exceeds this expectation by more than threefold, with an operating budget in 2012/13 of \$40.3 million. In terms of research output, over the past five years each department and school in the Faculty of Science produced more research publications than it had for the previous five years. These facts demonstrate that the Faculty of Science is unquestionably more research-intensive than it was five years ago.

Executive Summary

In the second half of the university's sixth decade, the Faculty of Science will continue to prioritize growth in terms of its physical infrastructure so as to permit expansion of our teaching and research activities. The first expansion will be the addition of a state-of-the-art Science Teaching Complex, which is scheduled for completion in 2015. This new 125,000 sq. ft. building will be pivotal to the future of the Faculty of Science. Its new lecture halls, undergraduate teaching laboratories, administrative offices and common spaces will improve the quality of tools with which our students are instructed and provide Science with an impressive new home on the main campus.

Over the next five years, we will complement our physical expansions by enhancing the content and delivery of our programs. One of our highest priorities will be ensuring our offerings continue to prepare students for careers or further education, while also investigating possible new specializations or programs. To make certain our programs remain relevant and enhance the employment readiness of our graduates, we must be cognizant of the benefits offered by our courses and ensure they effectively utilize our resources. We will upgrade our existing facilities accordingly.

As a Faculty, we recognize that support for research goes through cycles. It is generally acknowledged that the current funding climate in Canada increasingly favours programs intended to benefit our national economy through shorter-term applied research, rather than the traditional investment in longer-term fundamental research that has historically benefited our departments and schools. In order to continue to thrive in the current climate, we will improve support for funding applications over the next five years as a means through which to increase the diversity of funding received by Science. Additionally, we will work internally to improve our allocation of resources and strengthen internal opportunities to support research.

A key challenge facing Science at the moment is the limited space available for research. Despite our significant and much-needed capital investment in the new Science Teaching Complex, for the foreseeable future we will remain unable to accommodate more faculty members and graduate students. To this end, we envisage the creation of a new, research-focused Science complex on the main university campus that will attract researchers of the highest calibre to the Faculty of Science. Only by continuing to expand our professoriate and graduate student capacity, in concert with developing best practices for grant applications and diversifying funding sources, will Science make truly great strides towards increasing our standing in national and international research communities. Our successes in raising our research profile will, by extension, contribute to elevating the University of Waterloo's overall positioning and thus resonate with the university's strategic goals.

Over the next five years, we will support our teaching excellence, research capacity, diversity of funding sources and capital investment, and prioritize the improvement of Science as a whole, by enhancing our visibility and sense of community. Working with both internal and external goals in mind, the Faculty will emphasize the enhancement of our communications strategies in order to increase the visibility of our excellent academic programs and research strengths. Our primary aim in this respect will be to establish a reputation for Science at Waterloo that is truly commensurate with our accomplishments, many of which are not yet widely known. The benefits of increasing our visibility and reputation will no doubt include increased enrolment of top students from across Canada and beyond, along with increased visibility to potential partner organizations interested in supporting research.

We will also work to strengthen our Faculty from within so our people are well connected, and operations within Science are transparent and conducive to a sense of responsiveness and community. To this end, we will improve our internal communications through increased frequency and transparency so as to ensure individuals are properly supported and recognized for their contributions. With regards to how a sense of community applies to our students, it is our goal to develop more lasting relationships with our graduates as they transition into their lives after Waterloo. By strengthening our larger network of alumni and other external stakeholders, we will increase future opportunities for the Faculty of Science as we continue to benefit society through the expansion of scientific understanding.

Scope

The Faculty of Science Strategic Plan serves as a guide for the next five years in terms of the areas in which we are dedicated to effecting positive change and strengthening our Faculty, thereby enabling us to build on the outstanding education offered to our students and increase societal benefit through research. The scope of this document is not exhaustive, nor is it meant to be proscriptive of new ideas that might be identified during its five-year lifecycle. This document will be complemented by operational planning with regards to teaching, research, advancement, infrastructure, communications, recruitment and outreach, as well as other areas, as needed. Our operational plans will be updated regularly to ensure we are holding ourselves accountable for realizing our strategic goals through specific and measurable actions. In 2017, the current document will allow us to critically reflect on our progress and inform the next round of strategic planning.

Planning Process

In mid-2012, the Faculty of Science undertook self-assessment of our performance metrics for enrolment trends, research revenue and output, and space allocations. In late 2012, this led to consultations involving our six departments and schools, at which time each group was asked to address how the University's six foundational pillars – academic excellence, research excellence and impact, graduate studies, co-operative education, internationalization, and entrepreneurship – apply to their activities and to identify their areas of greatest research intensity. This process was conducted using a variety of methods, including interviews, facilitated discussions and subcommittees, ultimately leading to feedback that informed us as to potential goal areas and issues of relevance to the Faculty. This self-assessment process culminated in a Strategic Planning Retreat, held in February of 2013, where 40 faculty representatives were invited to share feedback from their groups.

After the retreat, a draft strategic plan was prepared by the planning executive committee, a subset of the larger Science planning committee, who synthesized feedback from the planning discussions and retreat. This draft was then progressively revised, allowing for internal consultation within the Faculty and with our on-campus partners, as we articulated the Faculty's strategic priorities for the next five years. The final strategic plan will be operationalized beginning in the third quarter of 2013. Beginning in 2014, there will be annual reviews of our progress towards realizing our strategic goals.

Mission and Vision

Mission

We shape the future by expanding understanding of the living and physical world and by empowering students with this knowledge.

Vision

As an integral part of Canada's most innovative university, the Faculty of Science is a global leader for scientific teaching and research and a preferred destination for those seeking to engage in world-class discovery.

Core Strategies

PRIORITY AREA : Undergraduate and Graduate Education

STRATEGIC GOAL 1 :

Provide a modern and relevant science education founded on academic excellence and an ethic of research and discovery

To achieve this goal, we will:

- 1.1: Enhance the scope of our first-year experience to better prepare students for their careers in the Faculty of Science and beyond
- 1.2: Implement continuous curricular reviews within and across our units to ensure our programs are current and meeting the needs of our students
- 1.3: Strengthen the quality of instruction received by students and ensure responsiveness to their constructive feedback
- 1.4: Enhance the employment readiness of our graduates through co-op and increased involvement in experiential learning and entrepreneurship

PRIORITY AREA : Basic and Applied Research

STRATEGIC GOAL 2:

Promote cutting-edge research of relevance to our society

To achieve this goal, we will:

- 2.1: Establish new mechanisms to improve success in funding applications
- 2.2: Diversify research funding to include domestic, international and private sources beyond those commonly awarded to the Faculty of Science
- 2.3: Improve knowledge mobilization through increased application and commercialization of our research
- 2.4: Increase societal impact through communication of our research outcomes
- 2.5: Improve funding development and allocation with regards to graduate students and postdoctoral researchers

Enabling Strategies

PRIORITY AREA : Facilities and Infrastructure

STRATEGIC GOAL 3:

Create world-class research infrastructure within the Faculty of Science

To achieve this goal, we will:

- 3.1:** Establish new Faculty of Science research buildings and facilities
- 3.2:** Modernize existing facilities to increase and improve research space
- 3.3:** Establish faculty-wide instrumentation programs or centres

STRATEGIC GOAL 4:

Support our teaching activities with suitable and up-to-date physical resources

To achieve this goal, we will:

- 4.1:** Upgrade classrooms, laboratories, clinics and equipment used in teaching

STRATEGIC GOAL 5:

Provide a physical environment that establishes the Faculty of Science as a united, engaged and effective community

To achieve this goal, we will:

- 5.1:** Upgrade and consolidate Faculty of Science administrative spaces
- 5.2:** Increase and update common and social spaces

PRIORITY AREA : Visibility, Reputation and Community

STRATEGIC GOAL 6:

Grow our reputation and brand in order to increase future opportunities

To achieve this goal, we will:

- 6.1:** Aggressively promote ourselves as a world-leading centre for scientific research
- 6.2:** Increase visibility of our academic programs in order to attract the highest quality students from across Canada and beyond

STRATEGIC GOAL 7:

Foster an increased sense of common purpose, community and engagement

To achieve this goal, we will:

- 7.1:** Strengthen the working environment within the Faculty of Science for the benefit of all staff, students and faculty
- 7.2:** Build our network with alumni, on-campus partners and external stakeholders

Priority Area: Undergraduate and Graduate Education

STRATEGIC GOAL 1:

Provide a modern and relevant science education founded on academic excellence and an ethic of research and discovery

In order to support all of our students, we as a Faculty must continue to provide the highest standard of teaching excellence for which we have deservedly become known. Owing to the fundamental nature of scientific education and its application to a diverse range of fields, the Faculty of Science is responsible for training students who will go on to excel in all walks of life; this includes not only students registered in Science, but also those from other faculties who elect to study science or do so as part of other degrees. The overall quality of teaching in the Faculty of Science is strong and well-recognized through our recipients of Distinguished Teaching Awards; nevertheless, we recognize there will always be opportunities to improve. In the interest of fostering a more unified teaching structure, we will address the way in which our teaching is coordinated within and among our departments and schools. Moving forward, we will take steps to deepen our sense of identity in the Faculty in order to better support our students, particularly new students as they transition into Science. Beginning with first year, we will lay the foundation for lifelong relationships between our students and the Faculty.

In addition to providing a shared identity for Science students and ensuring that our degree programs are effectively positioned in order to meet their needs and expectations, we will build upon our strengths in experiential learning and continue to improve the employment readiness of our graduates. In the Faculty of Science, we have a long history of using hands-on teaching formats. Roughly 20 per cent of science courses involve instruction in laboratories and other experiential settings, including field-based work and clinical settings. Our students are also encouraged to seize opportunities outside of the classroom through summer employment, research opportunities, outreach initiatives and volunteerism. Experiential learning is fundamental to the identity of the University of Waterloo and is strongly associated with co-operative education at this institution. In the Faculty of Science, co-op plays an important and ever-increasing role in the education of our undergraduate students. Over the past five years, science undergraduate enrolment in co-op has increased from 27 per cent to 34 per cent. At the graduate level, experiential learning is an inextricable part of our offerings, given the research-intensive nature of our disciplines, making Science an excellent example of the importance of learning by doing. Over the next five years, we will continue to build on our foundation of co-operative education and experiential learning. We will also encourage an increased adoption of entrepreneurship among our students by supporting entrepreneurial successes from within our own faculty and increasing ties on campus to initiatives such as VeloCity, the University of Waterloo program that supports the establishment of startup businesses by students and recent Waterloo alumni.

Objective 1.1: Enhance the scope of our first-year experience to better prepare students for their careers in the Faculty of Science and beyond

To enable our students to reach their full academic potential and help establish the behaviours necessary to become lifelong learners, we must support our students by providing them with the education and tools necessary to ensure strong success throughout their time at Waterloo and beyond. As a result of pressures associated with increasing enrolment and the diverse abilities of students arriving from a wider range of high schools, we must increase our efforts to support our incoming students.

Over the next five years, we will implement new mechanisms to ensure our first-year students are exposed to the full range of disciplines housed in Science, thus establishing a greater shared experience and helping to strengthen the identity of Science at Waterloo. As early as their first term on campus, we will introduce our students to potential career paths in scientific fields as well as those outside of traditional scientific disciplines. Beyond their core studies, science students increasingly will be supported through involvement in a greater diversity of learning experiences early in their studies. Existing programs to support student success are important and highly valued in Science; we will build on this foundation as we establish mechanisms to support all of our students in developing a broader diversity of skills in areas such as critical thinking, communications, ethics and experimental methods, all of which are central to a scientific education and are highly transferrable skills. Finally, as a means to further support our outstanding incoming students, the Faculty of Science will ensure that we instil in them our strong values, particularly with regards to academic integrity. We aspire to help all of our students reach their full academic potential and become the best possible ambassadors for Science during their time with us and when they move on to the next stages in their lives as Waterloo Science alumni.

We will realize this objective by:

1.1.1 Establishing a regular first-year seminar series for all science students, the topics of which will highlight linkages between our disciplines and inform students regarding career trajectories

1.1.2 Ensuring first-year curriculum material and delivery are sufficiently relevant and engaging to smooth the transition of students into Science

1.1.3 Broadening the scope of education received by our students through early fundamental and transferrable skills training, including best practices regarding academic integrity

1.1.4 Increasing the engagement of alumni as models for current students and examples of where their education is taking them

Objective 1.2: Implement continuous curricular reviews within and across our units to ensure our programs are meeting the needs of our students

In order to enhance the learning experience of students enrolled in Faculty of Science courses, we will undertake updates to our offerings on a continuing basis and in response to identified needs. One third of science students are enrolled in the honours science program, the single largest enrolment in the Faculty of Science. Owing to their lack of department or school affiliation, these students can lack an affinity and sense of ongoing relationship with the Faculty. To address this challenge, we must examine the current positioning of our programs in order to more deeply engage with our students. For a number of students, the appeal of honours science is the flexibility with which it facilitates subsequent application to professional schools; thus, we will investigate this and other career paths that could be supported as streams or specializations. By developing an improved sense of connection to their programs, we will be able to more strategically position our degrees in order to attract the best students by offering undergraduate education that best meet their needs.

Additionally, we will assess the applicability of our current program offerings and employment readiness of our graduates. This will allow us to address emerging needs within disciplines and potentially develop new content or programs to address these changes as well as discontinue offerings that are no longer deemed to be meeting expected educational goals. We cannot overstate the positive impact on future alumni affinity and engagement that can be realized by ensuring our programs are of the greatest possible benefit to our current students.

We will realize this objective by:

1.2.1 Coordinating consistent curriculum mapping and review across all units so as to ensure programs are effectively delivering on intended academic outcomes

1.2.2 Investigating the positioning of our programs, particularly honours science, to ensure they reflect the learning outcomes of students and contribute to an effective overall brand for the Faculty of Science

1.2.3 Developing new programs that are relevant to society's needs and are consistent with the demands placed upon the Faculty of Science

1.2.4 Increasing affinity and identity activities in support of long-term engagement

Objective 1.3: Strengthen the quality of instruction received by students and ensure responsiveness to their constructive feedback

In order to offer the best possible education to our students, the Faculty of Science must continue to develop and implement organizational structures that strengthen the teaching skills of our instructors. In addition to the teaching excellence of our individual faculty members, Science has a long history of a highly-engaged team approach to undergraduate education. By increasing support for the training of personnel involved in teaching, we will build on the framework for training and support services that have been established and currently provide value to our students. The existing framework supporting teaching excellence includes faculty-based counselling services and specialists from the University of Waterloo Centre for Teaching Excellence (CTE); it is our goal to expand on this support and ensure its delivery in a consistent and equitable manner within the Faculty of Science. As disciplines evolve and new techniques are developed, teaching methods must be updated to reflect modern standards. To strengthen learning in the Faculty of Science, we will complement our commitment to experiential learning with increased use of online and e-learning tools.

In order to ensure the effectiveness of our efforts to enhance our teaching, we must look both to the academic achievements of our students as well as to their satisfaction with our courses. To increase transparency in how our courses are received, we will update our monitoring of academic achievement and institute accessible surveying. This will serve as a spur to future teaching excellence.

We will realize this objective by:

1.3.1 Establishing committees (intra- and inter-departmental/school) to address current best practices in teaching and react to issues and concerns within an academic term

1.3.2 Enhancing training of personnel with regards to teaching best practices

1.3.3 Improving use of blended education so as to enhance content delivery through online and e-learning methods

1.3.4 Developing student peer-mentoring programs to support student success

1.3.5 Updating student course evaluation surveying and making the results openly available

Objective 1.4: Enhance the employment readiness of our graduates through co-op and increased involvement in experiential learning and entrepreneurship

Due to the complementary relationship between research and our success in didactic teaching, the Faculty of Science will increase the exposure of our students to experiential learning and solicit feedback about their experiences. Given that research is an inextricable component of scientific discovery, as is the co-operative education model at the University of Waterloo, we will build on our existing dedication in these areas by increasing the number of co-op opportunities in the Faculty of Science. We will increase the diversity of co-op positions offered within the Faculty of Science, thereby providing students with a greater understanding of the role that research plays in scientific discovery. The introduction of workshops and symposia to highlight research activity and provide networking opportunities will allow our students to communicate the results of their experiential learning to diverse audiences; this experience will benefit students by encouraging the development of invaluable skills relating to the interpretation and communication of findings. We will facilitate the broader application of experiential education to Science by exploring student entrepreneurial activity through increased participation with on-campus initiatives, such as VeloCity, as well as the formation of student research teams and involvement in student research competitions.

We will realize this objective by:

- 1.4.1 Increasing Faculty financial support for on-campus co-op research opportunities
- 1.4.2 Increasing diversity of co-op positions within the Faculty of Science, including the possibility of shared supervision to broaden the research experience of students
- 1.4.3 Creating a Science showcase to highlight recent co-op and experiential learning
- 1.4.4 Working with Co-operative Education and Career Action (CECA) to increase the diversity of co-op positions available to Science students, particularly those outside of Southwestern Ontario
- 1.4.5 Working with CECA to update the co-op work term reporting structure
- 1.4.6 Establishing ties with VeloCity to encourage student entrepreneurship
- 1.4.7 Establishing student research teams and encouraging participation in competitions

Priority Area: Basic and Applied Research

STRATEGIC GOAL 2:

Promote cutting-edge research of relevance to our society

The profile of the Faculty of Science is tied to its deep and ongoing commitment to fundamental, applied and clinical research. We are a research powerhouse at the University of Waterloo that yields profound benefit in fields spanning the full spectrum of scientific discovery. Our investigations range from fundamental questions concerning the origins of matter, life and the universe, to application-driven research involving quality of water, detection of pollutants and pathogens, synthesis of new materials, and the identification and treatment of illness and disease. Foremost among the impact of our research is the high-quality training and skills obtained by our students as they confront questions of pressing importance to society. In addition to benefitting society through important new discoveries gained by basic research, many of the cutting-edge innovations originating from Science at Waterloo have been translated into socially or commercially relevant outcomes through licensing to existing industrial partners and the establishment of new companies to exploit such inventions.

To promote increased productivity in research over the next five years, we must understand our successes and continue to build on them. Mindful of the ever-changing landscape of government funding and priorities, we will build on our past successes by fostering additional avenues of funding which permit expansion of our research and provide some measure of protection from changes beyond our control. Science already recognizes that increases in grant numbers alone will not be enough to increase our research intensity. To that end, we will also prioritize efficient use of research funding and seek to generate additional internal opportunities to encourage new, potentially risk-taking research that will form the basis of new discoveries and continue to redefine the way we understand and influence the world around us.

Objective 2.1 Establish new mechanisms to improve success in funding applications

Maximizing our success in securing research funding is one of several pieces that will be critical for the continuing growth of our research activity. The Faculty of Science is already disproportionately successful in terms of research funding generation at the University of Waterloo, and we must also make it our priority to be disproportionately successful relative to comparable faculties across Canada. To improve our success rate in research funding applications, we will establish a program of internal peer review so as to offer constructive feedback on application drafts prior to agency deadlines. Mentorship will be established so as to provide guidance for new faculty in establishing their research groups and obtaining resources, thus supporting the professional development of our researchers throughout their careers.

Additionally, funding levels and sources will be monitored so as to identify successful strategies and new areas of expertise which align with external support. These lessons will be transmitted back into the faculty through an ongoing review and revision mechanism as a means to support both new and established faculty members. Beginning in 2013, the Faculty of Science will maintain accurate records of its publications and resulting intellectual property, allowing us to coordinate best practices for strengthening our approach to funding applications.

We will realize this objective by:

- 2.1.1 Implementing internal grant peer-review committees to provide feedback prior to submissions
- 2.1.2 Training and mentoring new faculty members, particularly with best practices for grant applications
- 2.1.3 Regularly reporting on funding application success rates
- 2.1.4 Maintaining records on faculty member publications, citation rates, venture and seed capitalization, and patent filings

Objective 2.2: Diversify research funding to include domestic, international and private sources beyond those commonly awarded to the Faculty of Science

We cannot overstate the importance of increasing the number of investigations in the Faculty of Science that are funded by organizations with research priorities aligning with our strengths, including both private-sector and philanthropic sources of funding. Moving forward, these sources of support must be actively pursued by our researchers as part of a larger faculty-level response to shifting governmental funding priorities. The research funding landscape today includes an ever-increasing number of opportunities requiring large and diverse collaborative teams, often spanning disciplines and locales, in order to ensure globally relevant solutions can be discovered and implemented.

In order to expand our research activity, all faculty members should have the opportunity to pursue ground-breaking innovations in their fields and have collaborations with the best of their peers, both nationally and internationally. Many programs now involve partnerships between academic researchers and private or other public-sector partners. By leveraging our reputation for excellence with the private sector, particularly with those companies that employ our co-op students, our faculty members will be able to develop new industrial partnerships to support research. A complementary program of internal seed grants will also be established. This will support bold, potentially paradigm-changing research that may be deemed too high risk by conventional funding sources, laying the groundwork for more ambitious applications and potentially for entrepreneurship among our faculty and their students. Sharing the results of these efforts will help inform the Faculty about strategies and projects that have met with success, both in the outcomes of their research and sources of financial support.

We will realize this objective by:

2.2.1 Offering small-scale opportunities within Science for startup and seed funding, helping to encourage risk-taking research and entrepreneurship

2.2.2 Appointing a collaborative grants team to facilitate the identification of potential research clusters and support coordinated grant applications

2.2.3 Facilitating large interdisciplinary projects that involve industry or societal issues

2.2.4 Participating in increased international partnerships and bilateral funding

2.2.5 Reporting annually on the status of diversified research funding

2.2.6 Increasing individual faculty member involvement in funding development through collaboration with the Office of Research and Faculty Advancement

Objective 2.3 Improve knowledge mobilization through increased application and commercialization of our research

The application of research conducted by the Faculty of Science is one of the most significant ways in which we contribute to Canadian society. In order to support and promote our research whenever possible, we will continue to co-operate with industrial partners and consult with the broader public on scientific issues of most pressing concern. For industrially-supported research, networking events and mentoring are essential in order to identify suitable opportunities and allow potential partners to see the quality of our work first hand. Moving forward, we will establish Faculty of Science events to showcase recent research.

Our co-op students act as ambassadors for our programs and give Science an advantage in terms of industry engagement. As a means to further develop this engagement, we will ensure our relationships with co-op employers are fully supported by the Faculty. As Science continues to grow, we will increase our capacity for research, both in terms of physical capital and personnel, and strengthen our ties with external and on-campus partners. We will continue to work with members of other faculties and support groups, such as the Office of Research, in order to facilitate the development of technologies suitable for commercialization.

We will realize this objective by:

2.3.1 Establishing on- and off-campus Science research showcases to promote and publicize current activity and facilitate connections with potential research partners

2.3.2 Establishing stronger levels of engagement with employers of our co-op students and industry-based alumni

2.3.3 Increasing collaboration with the Office of Research and the Office of Advancement to support networking on behalf of Science

2.3.4 Establishing a team to study researchers' profiles and identify areas potentially complementary to industry activity

2.3.5 Exploring research opportunities of societal benefit that involve collaborative funding or emerging models, such as crowdsourcing and citizen science

Objective 2.4: Increase societal impact through communication of our research outcomes

As a higher education institution dedicated to expanding knowledge through discovery, the Faculty of Science holds itself accountable for communicating our findings within the academic community and to external audiences, particularly the Canadian public, for the collective benefit of society. To that end, the Faculty of Science must continue to educate and inform via diverse media and by nominating our researchers for recognition through awards which can bring attention to their work, to the Faculty of Science and to the University of Waterloo as a whole. To raise awareness for our expertise, we will increase activities that showcase our fundamental research and enable greater engagement with the public.

Additionally, we will better communicate our research through engaging materials made accessible via the Faculty of Science's online presence as well as through traditional and social media. By improving the communication of our research outcomes, we will raise the visibility of the Faculty of Science at Waterloo, thereby increasing future opportunities for our Faculty.

We will realize this objective by:

2.4.1 Employing traditional and social media to maximize the visibility of our discoveries

2.4.2 Developing more talks on breaking issues and those of interest to the public which align with the expertise found among our faculty

2.4.3 Providing open online access to engaging content that showcases our researchers and their current investigations

2.4.4 Appointing a faculty awards team to facilitate nominations and thereby help ensure the public visibility of our researchers

Objective 2.5: Improve funding development and allocation with regards to graduate students and postdoctoral researchers

As part of our overall goal of increasing the research intensity of our Faculty, Science has prioritized the development of additional funding opportunities for graduate students, given their essentiality to our research output and our mandate to train highly qualified personnel (HQP). We also recognize the importance of the work done by postdoctoral fellows, another vitally important example of HQP in the sciences. The Faculty of Science is currently limited by the higher research costs incurred by our faculty members, as compared to departments at competing Canadian institutions. As a consequence of current funding inequities, any effort to increase our research intensity must address the higher costs faced by our faculty members associated with the training of HQP. In order to support and enhance the future success of our HQP and help alleviate some of the financial responsibility to our faculty members, a greater proportion of research personnel funding must originate from sources internal to Science as well as through increased advancement-related support. The Faculty of Science will therefore establish new graduate awards and postdoctoral research fellowships, freeing up grant and contract money to allow research teams to grow in size and capability. Faculty will also be able to use these internal sources of funding as recruitment tools.

We will realize this objective by:

2.5.1 Establishing new science graduate student awards and increased postdoctoral fellowships

2.5.2 Investigating methods to address current funding inequities with regards to HQP training funding allocation relative to competing institutions

Priority Area: Facilities and Infrastructure

STRATEGIC GOAL 3:

Create world-class research infrastructure within the Faculty of Science

The availability of high-quality space plays a crucial role in the success of all post-secondary institutions engaged in novel research, particularly those engaged in studies of the living and physical world. Owing to the breadth and diversity of fields studied in the Faculty of Science, we must satisfy a wide variety of physical requirements in order to provide safe and fully-serviced spaces for our researchers. Examples of the diversity of our current space requirements include, but are not limited to, research laboratories, office space for theorists, growth and incubation facilities for samples and organisms, and clinical space for interaction with the public. A significant concern for planning is that much of the Faculty of Science is housed in buildings which do not meet our essential requirements. Given that Science occupies some of the oldest buildings on campus, several of which are between 40 and 50 years old, many of our facilities require significant upgrading in order to renew our existing research capabilities.

Objective 3.1: Establish new Faculty of Science research buildings and facilities

The new Science Teaching Complex, with its state-of-the-art classrooms and teaching laboratories, will be a tremendous addition to Science; however, by virtue of its teaching focus, this new construction will not address the urgent need to expand facilities that house faculty member research. As such, it will be crucial for Science to expand in order to support our mission with regards to novel research. A number of potential priority areas have already been identified in the course of preparing this Strategic Plan, including new laboratory and office space (particularly for graduate students) as well as new greenhouse space and updated clinic facilities. Specific deliverables in terms of any new buildings will be considered, with our overall objective being to increase the space Science is able to dedicate to research. In order to maximize our opportunities to access a diversity of research funding sources, we will consider the eligibility requirements of matching and leveraged funding models when planning new spaces. We will prioritize the formation of a committee to oversee planning for new facilities and thereby allow for the preparation of associated advancement and space renewal plans.

We will realize this objective by:

3.1.1 Tasking a facilities update steering committee with identifying specific goals for new buildings so as to establish timelines, advancement and government relations goals as part of a space renewal plan

3.1.2 Acting on the goals developed by a facilities update steering committee to increase the space assigned to research in the Faculty of Science by no later than 2017

Objective 3.2: Modernize existing facilities to increase and improve research space

In addition to medium- and long-term plans to increase our capacity for research through the construction of new facilities, provisions must be made for the renewal of existing space. In order to realize these goals, we will identify the most urgent needs and make cases for support for refurbishments, particularly with regards to renovating existing laboratories and repurposing former teaching space as it becomes available when the new Science Teaching Complex opens. Science will maintain a space renewal plan in order to allow for continuous strategic revisiting of renovations, rather than addressing issues in an ad hoc fashion.

We will realize this objective by:

3.2.1 Tasking a facilities update steering committee with identifying specific goals for space renewals so as to establish advancement targets to form part of a space renewal plan

3.2.2 Initiating renewal of existing space, based on the recommendation of a facilities update steering committee, once the new Science Teaching Complex is completed

Objective 3.3: Establish Faculty-wide instrumentation programs or centres

In the interest of optimizing our access to equipment and instrumentation, we will identify areas of shared goals or existing redundancy with regards to instrumentation. The purpose of this exercise will be to increase our efficiency by identifying commonly used techniques that will benefit from centralization or sharing of responsibility between groups within the Faculty. Through the establishment of facilities that are accessible to all Science departments and schools, as well as other groups at the University of Waterloo and external parties, we will facilitate future strategic investments in state-of-the art equipment. This will benefit faculty members and students from diverse fields of research as well as internal and external partners.

We will realize this objective by:

3.3.1 Identifying instrumentation that can be centralized and establishing management and operational structures necessary for implementation of shared or common facilities

STRATEGIC GOAL 4:

Support our teaching activities with suitable and up-to-date physical resources

The Faculty of Science is committed to establishing a modern learning environment that supports all students and staff with the tools and physical infrastructure necessary for them to excel. Over the next five years, the Faculty will need to prioritize the renewal of existing teaching space in addition to the increased capacity for teaching, experiential learning and student interaction that the new Science Teaching Complex will afford. For many years, Science has dedicated resources to replacing and improving equipment in teaching laboratories on an annual basis; however, many of the teaching laboratories and related facilities now require modification and renovation to meet the current and anticipated requirements of our programs.

Objective 4.1: Upgrade classrooms, laboratories, clinics and equipment used in teaching

To meet the challenge posed by our aging facilities, we will undertake a program of facility updates to address the ability of our classroom, laboratories, clinics and equipment to deliver an internationally reputable undergraduate and graduate science education. Despite evolving teaching strategies and engagement with students through a variety of meeting types (tutorial, workshop, virtual), the lack of appropriate spaces and support services remains a current limitation. In order to implement appropriate updates to our existing teaching infrastructure, we will undertake a comprehensive review and prioritization exercise to identify the updates that are most immediately required and offer the greatest benefit. Particular emphasis will be placed on ensuring that classroom spaces are capable of being adapted or reconfigured for use with multiple teaching objectives as well as ensuring the modernity of equipment and facilities in teaching laboratories.

We will realize this goal by:

4.1.1 Tasking a facilities update steering committee with assessing the current state of laboratories, classrooms, teaching clinics and equipment, so as to inform a space renewal plan

4.1.2 Commencing renovation of existing teaching facilities, based on the recommendations of a facilities update steering committee, following the completion of the Science Teaching Complex

STRATEGIC GOAL 5:

Provide a physical environment that establishes the Faculty of Science as a unified, engaged and effective community

The success of the Faculty of Science is the result of the combined efforts of our diverse community of talented and passionate faculty members, staff members, students, alumni and external supporters, without whom Science would not be the nation-leading institution that it is today. Although Science comprises a diversity of units, including four departments and two schools, together we make up one Faculty, and we must therefore offer a physical presence which supports this identity. With this in mind, in addition to updating our teaching and research space, we recognize that we must provide appropriate spaces for our supporting functions. We also recognize that our faculty, staff and students require suitable spaces outside of the classroom, office, lab or clinic.

Objective 5.1: Upgrade and consolidate Faculty of Science administrative spaces

The Faculty of Science aspires to provide a physical environment that allows all of our people to reach their full academic or professional potential. With regards to our valued support and administrative roles, Science has endeavoured to make the best use of currently available space; nevertheless, on account of our need to grow and the constraints of our aging infrastructure, our offices have become dispersed among numerous buildings on the main campus. In addition to their essentiality to the day-to-day activities of the Faculty of Science, many of our administrative roles go beyond routine operations and contribute to the establishment of lifelong relationships with our prospective and current students as well as alumni. Thanks to the additional space that will become available with the addition of the Science Teaching Complex in 2015, Science will soon have the capacity to strengthen our administrative infrastructure. To foster an improved sense of community within the Faculty, we will promote optimal collaboration and increase the accessibility our administration, thereby creating a hub of activity within Science which is cohesive, welcoming and engaging.

We will realize this goal by:

5.1.1 Tasking a facilities update steering committee with renewing administrative space such that it best supports our people, the functioning of our units, and our relationships with stakeholders

Objective 5.2 Increase and update common and social spaces

In addition to teaching, research and administrative requirements, the Faculty of Science would benefit from improved spaces in which our people can interact informally and socialize. This additional space will foster an exchange of knowledge between our people, and help to create a positive shared experience for our students, faculty and staff. We will prioritize the creation of new common spaces that will enhance the overall atmosphere within Science buildings, thereby helping to make the Faculty of Science a more welcoming environment. Although the addition of the Science Teaching Complex will allow us to make significant progress towards this goal, by also updating existing infrastructure and incorporating common spaces into the planning of future expansions, we seek to reinvigorate Science facilities on the whole. Our aim is to increase not only opportunities for great ideas to start within Science at Waterloo, but also to strengthen the affinity our people feel towards the Faculty by providing outstanding spaces in which they can share in discovery.

We will realize this goal by:

5.2.1 Tasking a facilities update steering committee with establishing common and social spaces within Science for the benefit of our people as well as guests and visitors to the Faculty

Priority Area: Visibility, Reputation and Community

STRATEGIC GOAL 6:

Grow our reputation and brand in order to increase future opportunities

The Faculty of Science has an impressive record for academic excellence and quality of research which consistently results in our departments and schools being ranked among the best in Canada. Science also enjoys many unique distinctions in terms of the diversity of science education offered, such as housing one of only ten schools of pharmacy in Canada and the only school of optometry in the country offering the degree of Doctor of Optometry through English-language instruction. While our reputation and distinctiveness are enviable, we must never take them for granted and continually seek to reinforce and build in these areas.

The University of Waterloo is known nationally as “Canada’s most innovative university,” according to *Maclean’s* university rankings. The current challenge for the Faculty of Science is to aggressively promote itself, both internally and externally, and become recognized as one of the key components of what makes the University of Waterloo the outstanding institution it is known to be. To that end, it will be essential for Science to engage in high-quality and high-visibility communications as well as marketing and outreach activities that will establish Science at Waterloo as a more recognizable and desirable brand for scientific learning and discovery. The potential benefits of garnering more attention for our Faculty are manifold, particularly in terms of generating new opportunities to attract top students, researchers, academic partners and competitive funding. The issue of perceived reputation will be of increasing importance to Science and to the University of Waterloo as a whole, given the increasing prominence of university rankings with methodologies that include significant reputational components.

Objective 6.1: Aggressively promote ourselves as a world-leading centre for scientific research

We must be sure to promote the outstanding research accomplishments of our faculty members, both internally and externally. In order to increase our overall reputation, the research that is done here must be communicated to the public and recognized as originating within the Faculty. The Faculty of Science should be seen as a resource for knowledge, and its name should be synonymous with cutting-edge discoveries; by extension, its members should be called upon for their expert opinions on matters of significance to society. Moving forward, we will develop a Science communications team that will highlight our international rankings wherever possible, particularly relative to our Canadian counterparts at the discipline level. So as to ensure the accuracy of data used to promote the Faculty, we will maintain internal records with regards to our research activities. Thanks to ongoing campus-wide initiatives relating to bibliometrics and rankings, future access to U15 Group of Canadian Research Universities data will hopefully become available across the university; however, in the interim, it is imperative Science maintains robust data on our own activities in order to measure our progress towards realizing our strategic goals.

In addition to the general public's perception of the Faculty of Science, our academic peers need to be more aware of our activities so as to raise our profile as a destination for top students and as a centre for research collaborations of the highest calibre. To this end, we must celebrate the spirit of discovery, collaboration and entrepreneurship already found here by highlighting both individuals and organizations that have benefited from our discoveries. We must increase our visibility within our academic communities through participation in conferences and other gatherings, both nationally and internationally. Significant effort should be made to bring attention to Science rather than waiting to be called upon by potential partners. We will showcase our successes by hosting events that bring together our researchers, students, members of the media and industry partners, helping to make Science a more recognized and integrated part of our community.

We will realize this goal by:

6.1.1 Developing a strong Science communications team that can feed material to the central team and ensure the visibility of our researchers in media releases

6.1.2 Monitoring our reputation as reported by outside bodies

6.1.3 Increasing involvement of faculty and students in on- and off-campus academic events and outreach activities

6.1.4 Showcasing on-campus research to potential industry and government partners

6.1.5 Providing open, consistent and searchable information on personnel and research

6.1.6 Increasing internal awareness of the research output of the Faculty

Objective 6.2: Increase visibility of our academic programs in order to attract the highest quality students from across Canada and beyond

The Faculty of Science is known for the esteem in which our conferred degrees are held and the avidity with which our alumni are sought. We must continually seek to maintain the reputation of our degrees among faculties of science provincially, nationally and internationally. As one of the core functions of any university, the teaching of students must always remain one of the Faculty's highest priorities. To this end, Science must ensure its graduates are of the highest quality by attracting the best prospective students.

To attract high-quality students over the next five years, the Faculty of Science will expand its recruitment efforts. We have long enjoyed success recruiting from surrounding regions and, moving forward, we aim to increase our recruitment from the rest of Canada and beyond by prioritizing marketing outside of Southwestern Ontario. We are proud of our international recruitment, particularly our successful China 2+2 program, and will build on this as we expand our international presence. The Faculty of Science will increasingly undertake the building of partnerships with foreign academic institutions and governments, thereby increasing our visibility on the international stage. In addition, we will increase the visibility of our courses on the University of Waterloo campus, thus helping to encourage students from other faculties to benefit from increased exposure to the scientific disciplines. In order to increase graduate enrolment, we will increase attendance at graduate student recruitment venues and intensify promotion of graduate studies and research at national and international conferences.

We will realize this goal by:

6.2.1 Strengthening ties to high schools to support undergraduate recruitment

6.2.2 Prioritizing recruitment efforts of domestic students outside of Southwestern Ontario

6.2.3 Increasing international promotion of undergraduate and 2+2 programs

6.2.4 Attracting international graduate students of high academic standing who are supported by foreign government funding or other external sources

6.2.5 Establishing a recognizable logo and visual marks to help distinguish Science programs at Waterloo

6.2.6 Providing open, consistent and searchable information about all programs

6.2.7 Increasing service teaching of students in other faculties in order to increase visibility and awareness for the Faculty of Science within the University of Waterloo community

STRATEGIC GOAL 7:

Foster an increased sense of common purpose, community and engagement

Strengthening our sense of community within Science is relevant to all other Faculty activities. There are examples of objectives and tactics throughout our strategic plan that will indirectly help build a sense of unity; notable examples include the strengthening of the first-year experience and the creation of new Science buildings, which will be catalysts for interaction across our disciplines. In addition to these tactics, the Faculty of Science will undertake actions with the express goal of increasing the engagement of our people. As a Faculty spanning diverse fields of research, there has historically been a sense of separation at the department and school level within Science. Through effective internal communication, we will improve the integration of our units and place emphasis on ensuring our people have access to the tools necessary to stay informed about events affecting the Science community. We anticipate that, by seizing this opportunity, our people will increasingly feel recognized for their contributions, helping to foster a sense of satisfaction and pride within Science. By encouraging communication within the Faculty, we anticipate increased feedback which will help inform future planning.

In addition to strengthening community within Science, we must support the growth of our network outside of the university through improved external communications, outreach and alumni-focused initiatives. The growth of our external network will be of immeasurable benefit to the future activities of the Faculty and its graduates, fostering the creation of new co-op opportunities as well as increased financial support and fundraising for the Faculty. A developed external network can provide our alumni with access to opportunities that otherwise might not be available, connecting them to fellow alumni and supporting their career development. By improving both our internal stakeholder community and strengthening our ties to our graduates, the Faculty of Science aims to build cohesiveness and continue to attract top personnel, while also establishing relationships that will continue to positively affect our people and our graduates after their time at the University of Waterloo.

Objective 7.1: Strengthen the working environment within the Faculty of Science for the benefit of all staff, students and faculty

We will improve transparency in our operations in order to strengthen the community of people working within the Faculty of Science, including our faculty and staff members. Over the next five years, we will prioritize improved internal communications and access to decision-making within the Faculty. By increasing our internal lines of communication, we will remove impediments to collaboration between our units and help unify the Faculty of Science.

We will realize this goal by:

7.1.1 Improving mechanisms for internal communications and regularly updating Science personnel on significant developments within the Faculty

7.1.2 Increasing transparency in Faculty decision-making

7.1.3 Ensuring we provide a supportive working environment and recognizing the contributions of our people

7.1.4 Ensuring personnel are properly supported in order to succeed in their roles

Objective 7.2: Build our network with alumni, on-campus partners and external stakeholders

In order to support our goals relating to academic and research programs, we will improve our external communications and grow our public profile. Over the next five years, we will enhance our outreach to prospective students, alumni, government and industrial partners. As students of the Faculty of Science move on and become graduates, we will support the relationships formed during their time at the University of Waterloo by implementing improved alumni tracking. We will also strengthen our ties with our on-campus partners in order to continue to realize and increase mutually beneficial collaborations. Finally, by maintaining strong ties with our alumni, we will better understand the career trajectories taken after their time at Waterloo, thereby helping us to tailor our programs for the benefit of subsequent classes.

We will realize this goal by:

7.2.1 Establishing updated external communications strategies that utilize appropriate tools to maintain connections with our various stakeholders

7.2.2 Strengthening ties with our on-campus partners in order to collaborate towards realizing our goals

7.2.3 Strengthening ties with our alumni through increased alumni outreach and outcome tracking

Appendix A: Strategic Planning Executive Committee

Terry McMahon

Dean of Science
Professor, Chemistry

Bernard Duncker

Associate Dean, Research
Associate Professor, Biology

Stefan Idziak

Associate Dean, Co-op Education
Associate Professor, Physics and Astronomy

Bill Power

Associate Dean, Graduate Studies
Associate Professor, Chemistry

Karen Trevors

Executive Officer

Marc Gibson

Manager, Strategic Initiatives

Appendix B: Strategic Planning Retreat Attendees

Participant	First	Last	Affiliation
1	Carey	Bissonnette	Chemistry
2	Jonathan	Blay	Pharmacy
3	Monika	Bothwell	Administration
4	Trevor	Charles	Biology
5	Jeff	Chen	Physics
6	Liz	Diebolt	Administration
7	Mike	Ditty	Administration
8	Bernie	Duncker	Biology
9	Dave	Edwards	Pharmacy
10	Steve	Evans	Earth
11	John	Flanagan	Optometry
12	Jennifer	Fleet	Optometry
13	Sarah	Forgrave	Administration
14	Amy	Geddes	Administration
15	Marc	Gibson	Administration
16	Guy	Guillemette	Chemistry
17	Rob	Hill	Physics
18	John	Honek	Chemistry
19	Rohan	Jayasundera	Physics
20	Shoufa	Lin	Earth
21	Wing-Ki	Liu	Physics
22	Mungo	Marsden	Biology
23	Terry	McMahon	Administration
24	Brian	McNamara	Physics
25	Paul	Miskovsky	Administration
26	Barb	Moffatt	Biology
27	Bridget	Moloney	Office of Research
28	Heather	Neufeld	Administration
29	Josh	Neufeld	Biology
30	Richard	Oakley	Chemistry
31	Bill	Power	Chemistry
32	Carol	Ptacek	Earth
33	David	Rose	Biology
34	Diana	Royce	Facilitator
35	Marlee	Spafford	Optometry
36	Bill	Taylor	Biology
37	David	Timms	Administration
38	Karen	Trevors	Administration
39	Pam	Van Allen	Administration
40	Lisa	Weber	Administration
41	Stephen	Woods	Administration

Appendix C: Key Facts and Figures

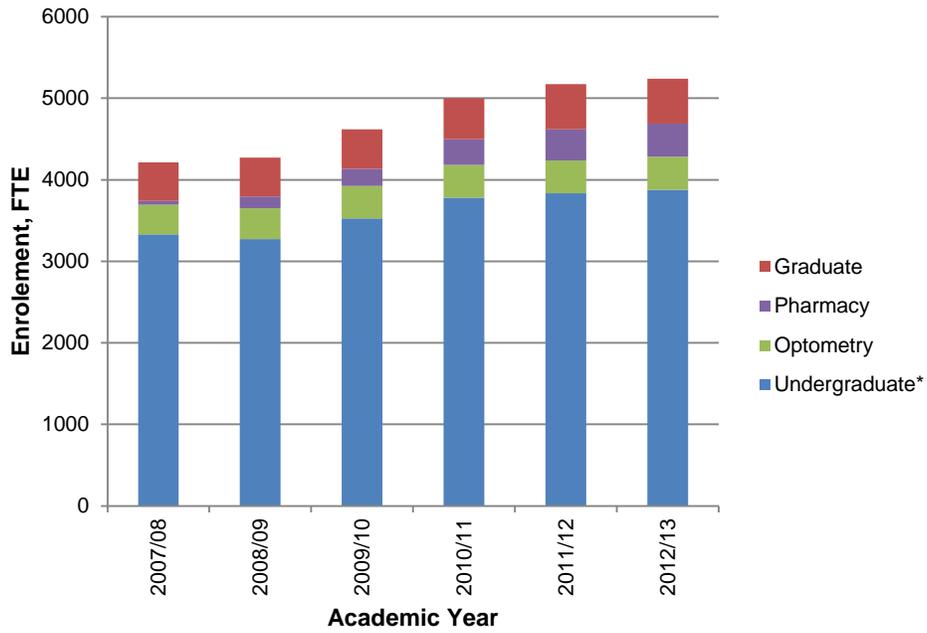


Figure 1.) Faculty of Science sixth decade full-time equivalent (FTE) enrolment by academic year

* Undergraduate enrolment in Optometry and Pharmacy shown separately to illustrate the influence of the addition of the School of Pharmacy

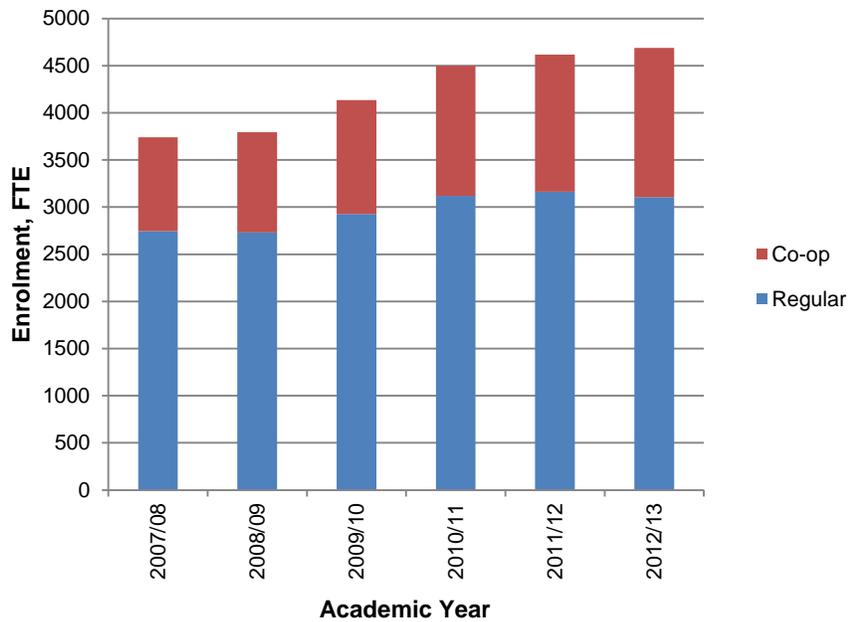


Figure 2.) Faculty of Science sixth decade full-time equivalent (FTE) enrolment showing co-op versus regular

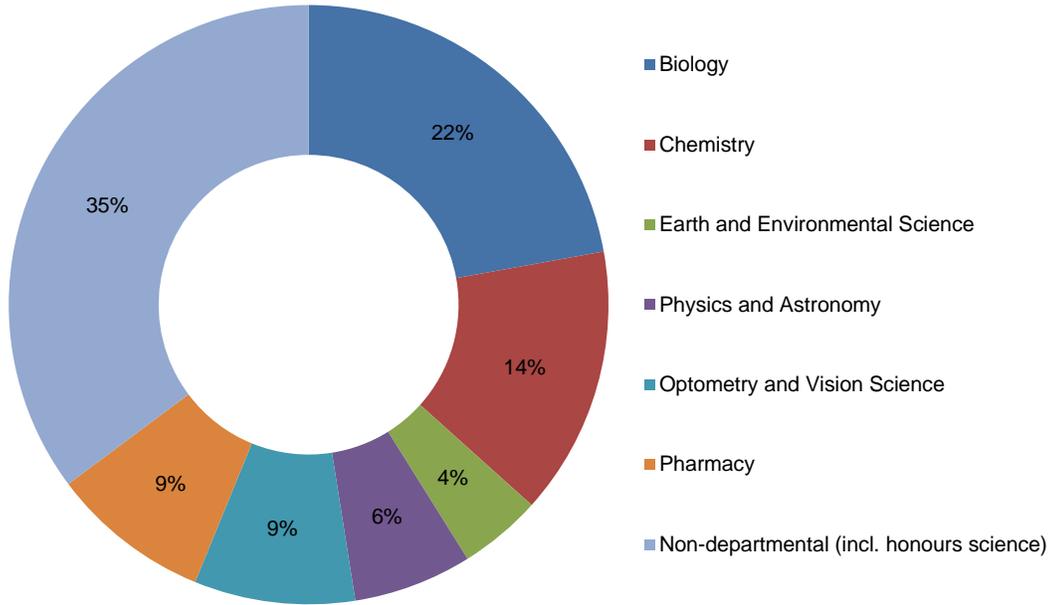


Figure 3.) Faculty of Science 2013 distribution of combined undergraduate and graduate full-time equivalent (FTE) enrolments by department/school*

* Shared programs divided evenly between associated departments

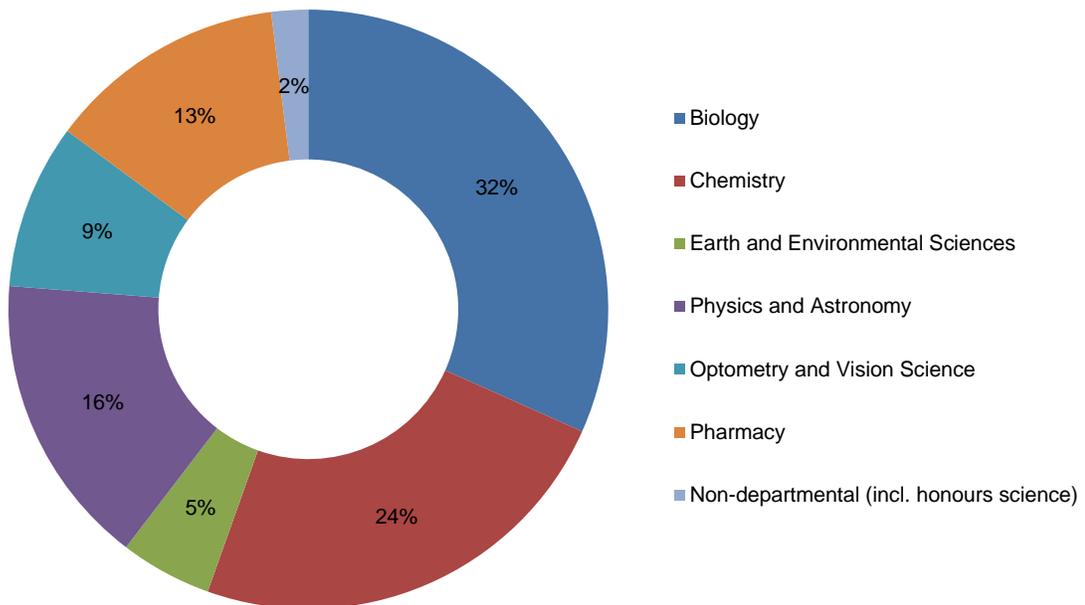


Figure 4.) Faculty of Science 2013 distribution of teaching involving regular appointment personnel

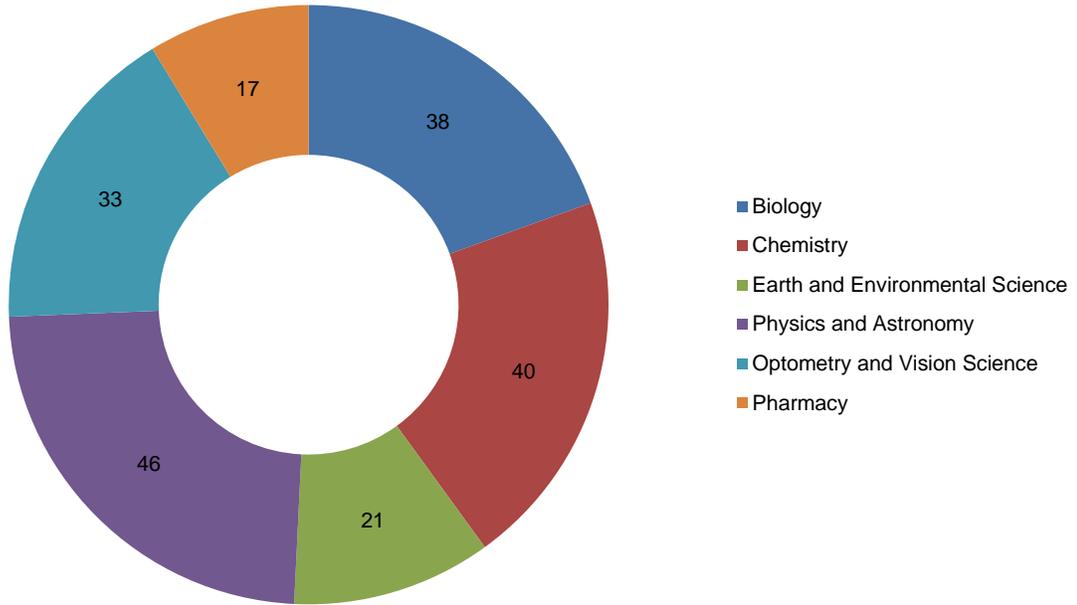


Figure 5.) Faculty of Science 2013 faculty member distribution by department/school

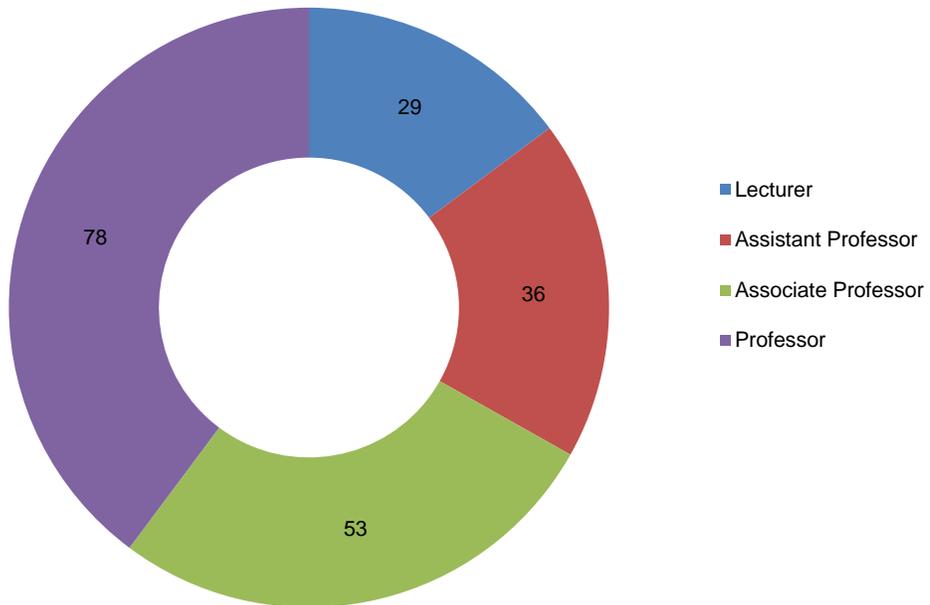


Figure 6.) Faculty of Science 2013 faculty member distribution by academic appointment

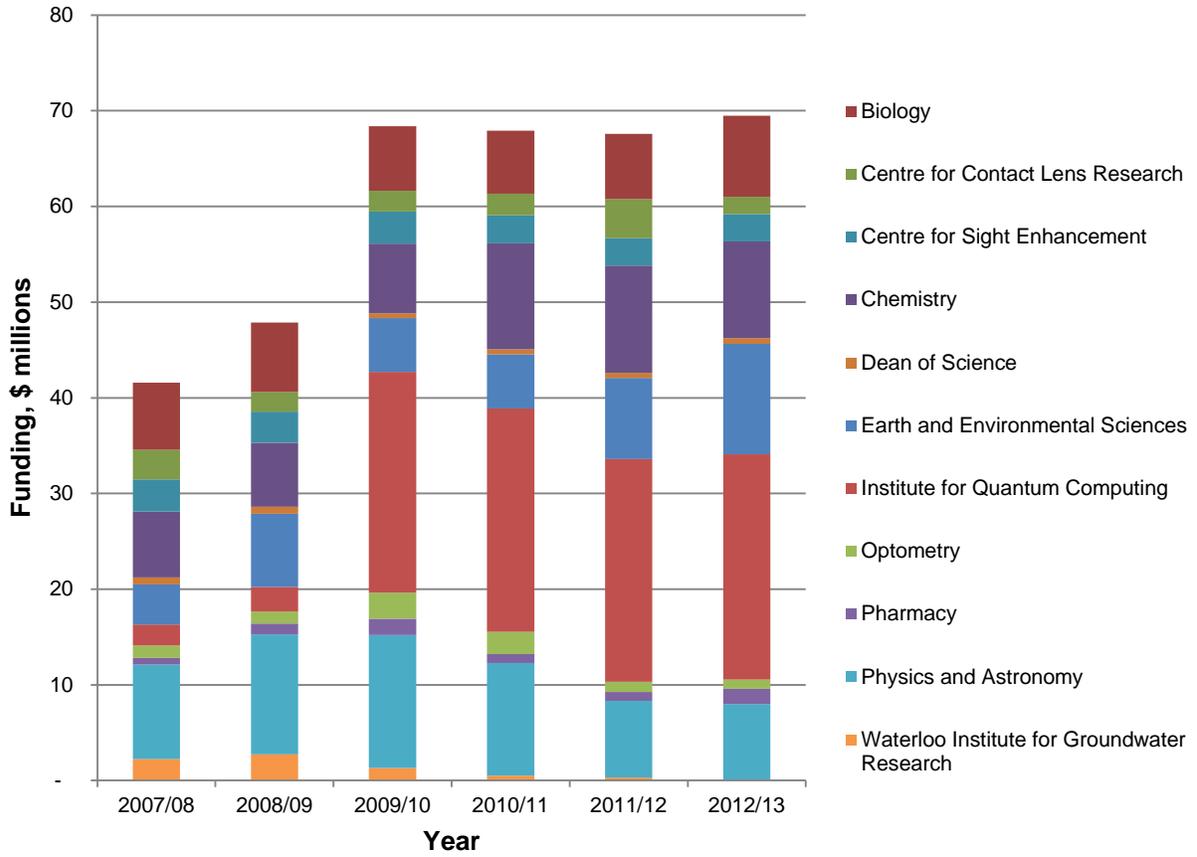


Figure 7.) Faculty of Science sixth decade research revenue by fiscal year

Table 1.) SWOT analysis presented at February, 2013 Science Planning Retreat

STRENGTHS	WEAKNESSES
1. Teaching experience of faculty members	1. Research limited by current space restrictions
2. Research excellence of faculty members	2. Lack of urgency regarding opportunities for collaborative research
3. Outreach programs (school visits, museum tours, CHEM13, SIN)	3. Lack of unity within departments/faculty (between students, faculty members, etc.)
4. International programs (2+2)	4. Lack of visibility of Science at UW
5. Spin-out experience of successful faculty members	5. Absence of aligned curriculum
6. External links through co-op	6. Unclear definitions of administrative responsibility
7. Alumni network	7. Inconsistencies in academics of incoming students (from high school, in 2+2, between UG and G)
8. New teaching facilities to come in 'Science Teaching Complex'	8. Lack of unified branding
9. Outward-facing Advancement, Alumni, and Communication team members	9. Lack of resources to seek out commercialization of research
10. Student success teams and Officer	10. Turnover and lack of succession planning, faculty and administrative
	11. Lack of internal funds to support students or research
OPPORTUNITIES	THREATS/CHALLENGES
1. Improve funding application rates	1. Decreased government funding to basic research
2. Investigate suitability of research activities for commercial partnering	2. Changing university funding models; resource-based allocation
3. Increase leveraged funding for industrial collaborations	3. Lack of alignment of enrolment targets with economic demands
4. Increase communication with schools	4. Competition from larger universities and those with medical schools
5. Increase advertising	5. Failure to benefit from profile of associated institutes (IQC, WIN, PI)
6. Increased online and blended education	6. Inability to hire due to lack of space
7. New program creation to generate revenue (Masters, diplomas)	
8. Improve best teaching policies	
9. Partnering with associated institutes (IQC, WIN, PI)	
10. Increased involvement in visible events (conferences, networking, industry days)	