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# Brandon University

## Faculty of Science

Strategic Plan: 2014-2019



**BRANDON**  
**UNIVERSITY**

*Founded 1899*

## Brandon University Faculty of Science Strategic Plan: 2014-2019

The Faculty of Science at Brandon University has a long and illustrious history. It has been a pillar of the University since the founding of Brandon College, and is known for the quality of its teaching and research in a small university setting. Through its teaching, research and service, members of the Science Faculty make significant professional and scientific contributions to the public, the provincial and national welfare, and to the University, local, provincial, national and international science and technology communities.

The Faculty of Science presents the following Strategic Plan to frame priorities and activities over the next five years – a very exciting period in the Faculty due to the implementation of new graduate and undergraduate programs, growing world-wide interest in and economic importance of science and technology, and continued expansions of research capacity and collaborations.

Importantly, to meet the growing demands of science and technology education and research, this strategic planning process considered the development of significantly improved and expanded infrastructure that will accommodate growing undergraduate and graduate student enrolments and external partnerships and the modernization and expanding role of the Faculty, while ensuring a safe and productive learning and work environment.

This document outlines the values, principles and strategic objectives of the Faculty, presents a plan to achieve its goals over the next five-year period, and aligns with the more recently developed and approved Brandon University Academic Plan.

### Mission and Vision for the Faculty of Science

*The mission of the Faculty of Science at Brandon University is to provide an accessible, highly interactive and supportive environment for teaching, learning, research, and community engagement in the sciences.*

*Our vision is to be the first choice for students who seek access to a personalized, high quality education in the sciences.*

### Background

The Faculty of Science at Brandon University currently consists of eight departments (Applied Disaster & Emergency Studies, Biology, Chemistry, Geography, Geology, Mathematics and Computer Science, Physics and Astronomy, and Psychology) and one program (Environmental Science). The Faculty of Science currently comprises 45 full-time faculty members and nine instructional associates. Both 3- and 4-year degree programs are offered, including an Honours degree in all departments. Graduates may enter a variety of

professional programs, attend graduate school, or gain employment in the public and private sectors. The Faculty of Science is currently implementing its first graduate program, an interdisciplinary Master of Science in Environmental and Life Science (*MELS*).

Research in the Faculty is very active across all departments, with a number of government and publicly funded laboratories in many disciplines. Research in the faculty crosses many disciplines and includes collaborations with academia, government and the private sector across Canada and internationally. There is currently a Canada Research Chair in Chemistry, while another CRC in watershed management is currently being recruited and will be housed in the Geography Department.

## Faculty Values & Guiding Principles

The Faculty of Science recognizes the following values consistent with our Mission and Vision and associated guiding principles, which were used to guide and frame this strategic plan. The Faculty of Science:

- Recognizes and values its role as the primary choice for post-secondary science education for students from Brandon and rural Manitoba.
- Provides an exceptional alternative for students from across Canada and around the world who wish to experience a personalized quality education in a rural setting.
- Appreciates its relationship with the larger community, including other BU Faculties, post-secondary institutes, government and industry.
- Offers personalized learning through both traditional and modern classroom teaching and research, by maintaining smaller class sizes and small student to faculty ratios.
- Strives to provide both undergraduate and graduate students with hands-on research training at all stages of the research process led by renowned researchers.
- Will continue to evolve and improve by developing new targeted programs and enhancing existing degree programs – both undergraduate and graduate – that distinguish the Faculty from other institutions in the region, while meeting the changing needs of society.

## Critical issues

As with much of higher education in Canada, the Faculty of Science is at a crossroads. Expanding science and technology programs, a new graduate degree program, and growing undergraduate enrolments in some departments require a new strategic initiative within the Faculty. This initiative aims to ensure the appropriate faculty and infrastructure resources are in place to support the success of the Faculty into the future. Critical issues that frame our strategic initiatives over the next several years include:

- Improved space and infrastructure are seen as crucial to recruiting and retaining students, developing relevant research programs, and providing a safe, modern, and productive learning environment for our students, faculty, and the broader community.

- The Faculty of Science recognizes a critical need to expand our interaction with, service to, and programming for all Brandon University students, the local community, the province and the nation.
- The development of relevant programming in teaching, research and outreach that distinguishes Brandon University from peer institutions in the eyes of prospective students, funding agencies, and the private sector is critical to reaffirming and strengthening the Faculty's identity and its relevance to its students and stakeholders.
- The Faculty of Science recognizes the importance of developing partnerships across Brandon University departments and Faculties, institutions of higher learning, and the public and private sectors that will provide a broader framework for cooperation and relevant and effective program development.
- In order to reflect the values held by the Faculty of Science and reinforce the University's reputation as a local, national and international community for higher education in the sciences, it is critical for the Faculty of Science to expand student outreach and recruitment to include a broader cross-section of Canadian society and increase student diversity through targeted national and international enrolment management.
- Recruitment and retention of world-class faculty in an increasingly competitive environment is critical as Science at BU positions itself as a world-class teaching, research and outreach Faculty.
- In the current economic climate, research funding at the federal and provincial levels is tight and the competition for these funds is stronger than ever. Exploring strategies to make the Faculty more competitive for external research grants is a high priority, including expanding and diversifying our research partnerships, collaborations, and funding sources.

## Strategic Objectives & Strategies

The Faculty of Science has initiated this strategic plan to address these critical issues on several levels. Below we outline our strategic objectives in the areas of undergraduate and graduate teaching, research, enrolment management and community engagement that address these critical issues, include strategies for achieving often interrelated objectives, and identify tactical approaches for successful implementation. Specific action items with target completion dates are designated with a ✓. Other action items, listed a through z under their respective strategies, represent initiatives that are continuous in nature and that will be implemented over the five year period of this plan. Very minor revisions to this plan align it with the 'key strategic priorities' outlined in the more recently developed and approved University academic plan. In addition, letters and roman numerals in parentheses following each strategy refer to key strategic priorities outlined in that plan.

**Strategic objective 1:** To improve our ability to develop and deliver relevant undergraduate academic programs to our students.

Strategy 1.1: Improve teaching infrastructure and address increasing needs for additional safe and productive space for innovative teaching.

- a. Examine how to meet the Faculty's teaching infrastructure needs, including the possibility of a new Science Building, or the incremental expansion and/or renovation of the Brodie Science building.
  - ✓ Conduct an internal space audit and needs assessment to be completed by all departments in the Faculty.

December 1, 2014

- b. Improve classroom equipment, including audio/visual equipment that allows recording of the lectures as well as synchronizing class with students who are not living in Brandon.
- c. At the Faculty level, work with the appropriate BU administrative offices to initiate an institutional capital fundraising campaign focused on improving teaching infrastructure.

Strategy 1.2: Develop and implement relevant undergraduate programs that build on current strengths and distinguish the Faculty of Science from its counterparts at other universities. (A.i-vi)

- a. Continue to pursue funding for interdepartmental programs consistent with changing labour market demands and relevant career paths.
  - ✓ Submit to COPSE a proposal for a program in Exploration Geophysics.

February 15, 2014

- ✓ Develop and submit concept papers and proposals for programs in, for example, geological engineering, psychology (MSc), agriculture, and biotechnology.

September 1, 2014

- b. Develop interdisciplinary/interdepartmental centres of excellence that distinguish the Faculty of Science from other universities in the province and region.
  - ✓ Develop a multidisciplinary watershed centre through strategic recruiting in ADES, Biology (replacement position in aquatic invertebrate biology), Chemistry, Environmental Science, Geography (new CRC in watershed management), and Geology, while incorporating existing expertise in rural development and watershed restoration.

June 1, 2015

- c. Stabilize and strengthen existing academic programs through strategic program prioritization and allocation/reallocation of Faculty and other resources.
- d. Consider shared appointments across departments.
- e. Explore new academic programs that are relevant to the province and region. For example, this may include degree programs related to agriculture (e.g., applied agriculture systems, and veterinary science), geology (e.g., environmental geoscience, geological engineering), chemistry (e.g., material science), and biology (e.g., biotechnology).
- f. Explore programs that tie into current departments and look for opportunities to maximize the potential of major/minor combinations with the Faculty of Arts.
- g. Expand the current outdated infrastructure to provide the required office space and teaching labs to accommodate existing degree programs that are experiencing or have potential for growth, new academic programs, undergraduate and graduate students, and faculty.
- h. Where appropriate, develop and convene at least once each year advisory boards at the department and Faculty levels, with board members representing relevant public and private sector employers and opinion leaders who can offer direction for the improvement of existing programs and the development of new academic programs to meet the changing needs of society.
- i. Develop new [2+2] articulation agreements with other institutions, such as Assiniboine Community College, University College of the North, and Lethbridge College.
- j. Investigate the potential for additional experiential, co-op, and service learning programming.

**Strategic Objective 2: Develop and implement new graduate programs and continued support and growth for MELS.**

Strategy 2.1: Implement consultation processes in the faculty to identify which graduate programs should be developed next. (B.i, iv, v)

Strategy 2.2: Expand the current outdated infrastructure to provide the required office space to accommodate graduate students. (B.i, ii)

Strategy 2.3: Continue discussions around an MSc in Applied Psychology and other graduate degree programs. (B.i, iii)

**Strategic Objective 3:** To improve our ability to maintain, develop and implement relevant research programs.

Strategy 3.1: Expand the research capacity of the Faculty of Science. (B.i, ii)

- a. Increase the number of faculty with external research funding.
- b. Provide start-up funding to newly hired faculty.
- c. Provide workload release for faculty with external grants, where possible, and the facilitation and promotion of grantsmanship.

✓ Hire a part-time Faculty of Science Research Facilitator. July 1, 2014

- d. Maintain a full complement of faculty in all departments consistent with demands associated with teaching and research.
- e. Expand the current outdated science infrastructure to provide the required research labs to faculty and undergraduate and graduate students.
- f. Hire faculty strategically to develop distinct research 'centres of excellence', while supporting existing academic programs.
- g. Encourage cross-departmental, cross-Faculty, and inter-university/agency research as well as small-scale, single-individual research, as appropriate to our disciplines and faculty make-up.

Strategy 3.2: Continue maintenance and modernization of scientific equipment for research and teaching labs, as well as the disposal of old equipment. (B.i- iii)

- a. Raise endowment funds from individuals and industries we have served and serve. Implement a campaign to seek funding for scholarships, equipment and infrastructure.
- b. Pursue the development of a Science Faculty Technician position to maintain and repair research equipment.
- c. Expand and improve current infrastructure to provide the required appropriate space to house scientific equipment. Examples include:
  - ✓ At the department level, develop and implement a plan for the maintenance, repair, replacement and other costs associated with capital equipment that reflects independence from the Faculty's discretionary budgets.

December 1, 2014

- ✓ Develop a lab for experimental psychology. January 1, 2015
- ✓ Develop a centralized storage for chemical and supply storage for the entire Faculty. This department would also work with purchasing to order supplies required by researchers to help expedite the ordering process. January 15, 2015
- ✓ Develop a geological core facility. September 1, 2014
- ✓ Develop a storage area and implement a system for the disposal of biohazardous waste June 1, 2015
- ✓ Develop a Faculty-wide inventory of research equipment, facilities, and services. December 1, 2014

Strategy 3.3: Forge more effective connections with public and private sector stakeholders. (B.iv)

- a. Develop and convene at least once each year advisory boards (see also 1.2) that focus on potential for relevant, fundable research.
- b. Improve our relationships with stakeholders in the public and private sectors.
  - ✓ Sponsor IndustryCONNECTs programming April 1, 2014
- c. Improve our relationships with local, provincial and national leaders, elected representatives and officials.

Strategy 3.4: Improve research infrastructure and address increasing needs for additional safe and productive space for research. (B.i, ii)

- a. Collaboratively examine how to meet the Faculty's research infrastructure needs, including the possibilities of a new Science Building, or the incremental expansion and/or renovation of the Brodie Science building.



- ✓ Conduct an internal space audit and needs assessment to be completed by all departments in the Faculty.

December 1, 2014

- b. Initiate an institutional capital fundraising campaign related to the improvement of research infrastructure.

**Strategic Objective 4: To improve student engagement, enrolment, retention and success.**

Strategy 4.1: Recruit and retain science students from a broad cross-section of Canadian society and internationally. (C.i-iii; D.i-vi; E.iv)

- a. Improve our science teaching, research space and infrastructure to make it comparable with that found at other institutions.

- b. Working with BU's Student Services, expand recruitment efforts to include southeastern Saskatchewan, central and northern Manitoba, and the northern United States (in particular, North and South Dakota and Montana) and beyond for selected program. Broader national and international recruitment may be appropriate for some programs.

- ✓ Develop and implement a strategic enrolment plan for each degree program with realistic targets.

January 1, 2015

- c. Explore ways to attract and retain more science undergraduate and graduate students from First Nations and Metis communities.

- d. Anticipate a population of new students from families of recent immigrants to the region by targeted recruitment and developing an awareness of the special needs of these populations.

- e. Attract mid-career students, such as those with military experience; those seeking a second degree; mature/returning students; and those living in remote areas.

- f. Use electronic media to promote the Faculty of Science in the community.

- g. Redesign the Faculty webpage and include recent news, publications, events in Science of interest to the community.

- h. Expand the current outdated infrastructure to provide the required classrooms and teaching labs to accommodate new undergraduate students.

Strategy 4.2: Improve curriculum awareness, relevance and development. (A.ii-vi; E.i, iii, iv)

- a. Assign faculty mentors to all science majors to provide guidance on degree program objectives, course mapping, and career opportunities.

- ✓ Plan and conduct forums with advisors and recruiters from Student Services at the department level.

February 1, 2015

- b. Expand the offering and improve the utilization of 090 courses in the Sciences, as determined by student needs and to augment efforts to make science education more accessible and inclusive.

- ✓ Develop or adopt model program plans for all departments and majors that articulate programs' missions and learning outcomes and curricula in order to support program planning.

February 1, 2014

- c. Develop mechanisms for scheduling courses that eliminate or minimize conflicts, especially as they relate to courses that are required for degree completion consistent with department by department curriculum mapping.

- d. Initiate a Faculty of Science self-assessment related to challenges and opportunities for improving overall enrolment management in the sciences.

Strategy 4.3: Strengthen the Faculty of Science student-faculty community. (D.v, vi; F.i)

- a. Strengthen opportunities for student-faculty interaction and the development of a cohesive Science Faculty community.

- b. Improve opportunities for professional development among faculty in the areas of curriculum planning, pedagogy, and teaching innovation.

- ✓ Conduct meetings with students from across all Science departments to share ideas about and solicit input on programs, curricula, and career paths.

January 15, 2014

**Strategic objective 5: To improve community engagement and outreach.**

Strategy 5.1: Forge more effective connections with stakeholders. (B.i; C.i-iii; v, vi)

- a. Where appropriate, develop and convene at least once each year advisory boards at the department and Faculty levels, with board members representing relevant public and private sector employers and opinion leaders.
- b. Improve our relationships with alumni and other stakeholders through Science Open House and a Faculty of Science newsletter.
- c. Improve our utilization of social media to outreach to the broader Faculty of Science community, including students, faculty and staff, alumni, and external partners.
  - ✓ Develop a Faculty of Science newsletter to be delivered and posted on the Science website at least once each year.

September 1, 2014

## Looking to the Future

The Faculty of Science fully appreciates and supports its role to build, maintain, and continue to grow a collegial and interactive environment for teaching, research, and outreach in the sciences. The Faculty already possesses excellent teachers, researchers and degree programs and is committed to strengthening and growing its role as a regional, national and international leader in science education and discovery to keep pace with an ever-evolving demand for well-trained scientists. This will take a sense of cohesion and shared goals among the diverse Faculty of Science community and its partners and strategic resource allocation in the face of budget constraints.

The Faculty of Science values its vital and expanding role in Manitoba and Canada. Our rural setting provides an exceptional opportunity for personalized learning and research, with immediate access to the natural environment that surrounds us. The Faculty understands that it must keep pace with changes in science and technology. Increasing growth and diversity in all sectors of our community and across the sciences present unprecedented challenges and opportunities for continued expansion of our academic and research programs. The Faculty of Science is dedicated to meeting these challenges and exploring and realizing these opportunities.

## The Faculty of Science strategic planning process

The strategic planning process was initiated by the members of the Science Faculty Planning Committee (J. Koch, M. Lemaire, J. Lindsay, H. Mumin, and ex-officio member A. Egan), over a series of meetings that included senior members of the central administration and other stakeholders in the summer of 2013. Draft documents were circulated to Chairs, which initiated an iterative process whereby the document was assessed by each department and program, with comments returned to SFPC for integration into the draft documents. A revised draft was forwarded to SFC until consensus was achieved.

In addition, in early 2014 the Dean met with student representatives of Science Faculty degree programs during two meetings – one on January 13, the other on February 10 – arranged by BUSU. Those discussions provided critical student perspectives that helped inform the strategic planning process and the content and direction of this Strategic Plan.

This Strategic Plan was unanimously approved by the Science Faculty Council on April 25, 2014. Very minor revisions to the plan have aligned it with the more recently approved Brandon University Academic Plan.