

Strategic Plan for the Faculty of Science

Memorial University of Newfoundland

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The province of Newfoundland and Labrador, and Memorial University are currently undergoing a period of rapid change. As the province's role within the country has changed, so too has the role of Memorial University and the Faculty of Science. The purpose of this document is to anticipate and plan for research, teaching, and service in this environment and to provide guidance to the Faculty of Science for the next decade.

Anticipated Challenges for the Faculty of Science from 2011 to 2021

- Memorial University will continue to shift its focus to become a more research-intensive university.
- Tri-council (NSERC, CIHR, SSHRC) funding will continue to be a basic operating resource for many faculty members. However, competition for these sources will only increase in the future. While tri-council funding will be fundamental to the research mission of the Faculty of Science, other agencies such as The Atlantic Canada Opportunities Agency, the Atlantic Innovation Fund, Canada Foundation for Innovation, Genome Canada, Genome Atlantic and the Newfoundland and Labrador Research and Development Council will continue to provide the financial resources that will allow us to significantly transform research. For the Faculty of Science to thrive in the next decade, we must pre-position ourselves to take full advantage of these and other opportunities.
- Graduate student numbers will continue to increase.
- Undergraduate student numbers will remain stable or increase modestly. This student population will become more ethnically diverse. Engagement of faculty in undergraduate recruitment activities will need to be increased.
- The numbers of students registering for distance education courses will continue to increase. With this growth, we will need to reconsider the blend of on-campus and distance courses acceptable for a MUN degree, and the extent to which the Faculty of Science should be offering courses to other institutions and accepting courses from other institutions.
- We will continue to be challenged by our infrastructure, but a revitalized provincial economy means that it is reasonable to assume that significant new construction will take place within the next 10 years.
- The Faculty of Science has not fully engaged its alumni. They are a critical resource for this Faculty so establishing this connection will be a major new undertaking.

Vision

A research-intensive Faculty that is renowned both for the caliber of our research and the quality of our graduates

Mission

Consistent with the mission of Memorial University, the Faculty of Science is dedicated to international excellence in research, teaching and engagement to the benefit of people locally, nationally, and internationally.

Mandate

Research

The Faculty of Science is responsible for the provision of a broad spectrum of basic science knowledge and as such serves as the foundation upon which more applied disciplines are based. It is our responsibility to further knowledge within specific science disciplines, as well as to create the conditions that facilitate interdisciplinary research.

Teaching

The Faculty of Science is intended to be broadly accessible to students. Emphasis is placed on creating an environment that encourages and supports the learning process, while also challenging our students to achieve goals they might not have thought possible.

The Plan

Research Goals:

The Faculty of Science will enhance its stature globally as a leading research-intensive faculty that advances knowledge and produces high calibre graduates. Research within the Faculty of Science is primarily devoted to questions of fundamental importance, but also includes applied research relevant locally, nationally, and internationally. To achieve this we will:

1. Support and promote basic and applied research excellence in areas of established strength and emerging opportunity while recognizing the freedom of the faculty to pursue individual research interests based on their judgement, skill, and curiosity. The hiring of faculty will be primarily driven by our research agenda.
2. Attract and retain world-class faculty, students, postdoctoral fellows and staff to engage in cutting edge research activity.
3. Foster an intellectual environment conducive to research excellence and to the training and mentoring of highly qualified personnel.
4. Provide the infrastructure and services essential to support the training of undergraduate and graduate students and leading-edge research.
5. Engage with partners within and outside of Memorial to promote and support interdisciplinary research, research networking, and research collaborations.
6. Promote the high caliber of our research. This can be achieved by more aggressively preparing and nominating our faculty and graduate students for national and international awards.

Current Strengths and Emerging Opportunities in Research

The Faculty of Science currently has substantial and diverse research strength, the greatest being our faculty, staff, and students. Within academic departments research agendas are driven by the discipline-specific [departmental strategic plans](#). Beyond those, the Faculty of Science engages in interdisciplinary research that crosscuts individual departments and serves to synergize the research endeavor in the Faculty as a whole. The current research strengths include *Marine Sciences*; *Natural Resources*; *Biomedical Sciences and Health*; *Materials Science*; and *Mathematical and Computational Sciences*.

While the Faculty of Science is committed to maintaining its core areas, there are also particular areas of emerging opportunity generated by the expertise of our faculty, our research infrastructure, and our geographical position with its associated climate, resources, and ecology that distinguish us from other faculties of Science. We therefore provide diverse opportunities that will draw researchers and students here in preference to other universities in Canada or internationally. The areas also crosscut most of the departments and are consistent with the priority and strategic areas that federal and provincial government agencies target for funding as well as [Memorial's special obligation](#) to the people of Newfoundland and Labrador. They also reflect areas in which we have made recent new hires. For the Faculty of Science, these strategic research areas are:

Marine Sciences

Research activities in this area includes, for example: biological, chemical, physical, and geological oceanography and oceanographic modeling; ocean acoustics; ocean data visualization; ocean sensor and instrumentation development; physiology, molecular biology, and biochemistry of aquatic species; aquaculture and fisheries science; marine ecology; cognitive and behavioural ecology of marine species; conservation and climate change; glacial climate systems; harsh environments.

Natural Resources and Energy

Research activities in this area include the discovery, production and monitoring of non-renewable and renewable natural resources as well as traditional and alternative sources of energy. Some examples are: petroleum reservoir characterization and modeling; mineralogy; stratigraphy; sedimentology; exploration geophysics; tectonics; environmental impact and monitoring of resource extraction; biofuels and materials; energy sustainability, cognitive and behavioural ecology; landscape

ecology and conservation; plant ecology; environmental geology; sustainable/green chemistry; alternative energy sources; geochemistry; biogeochemistry; contaminant hydrology; environmental chemistry.

Teaching Goals:

The Faculty of Science is dedicated to providing our undergraduate and graduate students with the best possible educational experience, acknowledging the needs and interests of our province.

1. All decisions involving the education of our students will be designed to uphold the value of a Memorial University Science degree.
2. Students will be provided with the highest quality of instruction. To ensure this, faculty members will receive constructive feedback, and be provided with the opportunity and the means to improve and enhance their teaching and to develop innovations in teaching. Graduate students will have opportunities for developing their teaching skills.
3. We will maintain an infrastructure appropriate for contemporary learning. Undergraduate laboratory equipment will have technology consistent with that used in the modern research environment.
4. Undergraduate students will be involved in the research environment. Our undergraduates will be given the opportunity to participate in research and such experience should be credited on their transcripts. Undergraduate students will be encouraged to present their research findings at regional and national scholarly conferences.
5. We will incorporate technological advancements into our curricula whenever it is appropriate to do so. In particular, an increase in the scope of distance course offerings here and elsewhere will create challenges and opportunities.
6. Teaching excellence will be recognized and rewarded by actively nominating faculty for local and national teaching awards.

Current Strengths and Emerging Opportunities in Teaching

The Faculty of Science has a strong reputation of excellence in teaching that is a consequence of the skill and dedication of our faculty and staff. Our instruction ranges from the traditional lecture format, to learning opportunities that place greater emphasis on experiential learning (e.g., field schools and courses and clinical training), to award winning distance education courses. While the Faculty of Science includes a diverse range of disciplines, we are committed to providing students with both the opportunity to learn and the opportunity to apply their knowledge. Coop programs are a relatively small component of our programs within the Faculty of Science, and they provide a learning opportunity that should grow in the future. Likewise, there are also opportunities for expanding the range of options for our students through partnerships with other faculties (e.g., life science and engineering science).

Priorities for most of our undergraduate and graduate programs are provided by our departmental strategic plans. The Faculty of Science is home to our interdisciplinary graduate programs (Aquaculture, Cognitive and Behavioural Ecology, Computational Science, Environmental Science, and Theoretical Physics). As our graduate programs reflect our research expertise, we expect growth in our graduate programs to be fueled by growth in our research programs.

Engagement:

As one of the largest academic units at Memorial University, we tend to be modest about our achievements. However, such modesty means that most outside the Faculty of Science do not know who we are, what we do, and how we contribute to both the university and the province. We therefore do not get the recognition we deserve in terms of the excellence of our teaching programs, and the accomplishments of our students, faculty and staff.

1. We will better engage with the community to make clear our contribution to society and our contribution to the success of the province.
2. We will make a strong connection with our alumni so that they remain engaged with the Faculty of Science after they graduate.
3. The Faculty of Science at Memorial will establish a national profile that distinguishes it from science at other universities in Canada. This will be informed by our research and teaching goals.
4. We will be proactive in our use of technology in order to have a presence in a variety of different media.
5. Our faculty are encouraged to be more engaged with the media and they will be assisted with media training.

6. Students will be encouraged to participate in national and international competitions to both inform ourselves and others of the strengths of our programs.