

Strategic Plan 2013 - 2018

Vision 2020

**Faculty of Engineering and Applied Science
Progress Report 2014/2015**

**Memorial Engineering
December 2015**

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1 Executive Summary

The Faculty of Engineering and Applied Science successfully completed Year 3 (2014-15) of its 8-year growth plan in the Engineering Expansion Strategic Initiative, as per the FEAS Strategic Plan entitled “Vision 2020”. The strategic plan outlines the Faculty's priorities, action items, and progress indicators. It is consistent with the University's capstone strategic plan and frameworks.

FEAS has met and exceeded its enrolment growth target of 10-15 additional graduates per year, while maintaining among the highest entrance averages of engineering schools in Canada (88%). The increased number of first year BEng students accepted for the Classes of 2017-2020 is leading to incremental enrolment growth of about 5%/year in Years 5-8 of the 8-year growth plan. Recent data, excluding expected attrition prior to graduation, indicates the following graduating class sizes: 2015 – 194; 2016 – 218; and 2018 – 237. This is on schedule to reach the goal of 250 graduates by 2020 (see Table 1).

Vision 2020	2012	2020
Number of graduates (undergraduate)	155	250
First-year intake (undergraduate)	300	425
Total student enrolment (graduate)	360	650

Table 1: Enrolment growth plan of “Vision 2020”

The following table summarizes the enrolment growth of MEng and MAsC students.

Year	2012	2013	2014	2015	2016	2018	2020
Enrolment (MEng / MAsC / PhD / Diploma)			480	-	525 *	570 *	625 *
Actual	452	478	547	620			

Table 2: Actual and projected enrolment growth of MAsC / MEng students

It can be seen that the Faculty's growth has significantly outpaced the original projections (*) made in 2012 as part of the Faculty Growth Plan. In 2015, FEAS surpassed the 2018 projected enrolment – two years ahead of schedule. PhD enrollment as a proportion of the total has also steadily increased over the last few years, as indicated below.

Year	2012	2013	2014	2015
PhD Enrolment	111	139	179	212
Percent of Total	24.6%	29.1%	32.7%	34.2%

Table 1: Enrolment growth of PhD students

An upcoming site visit for program accreditation by CEAB (Canadian Engineering Accreditation Board) in 2017 entails a major transition to a new “outcomes based” assessment of graduate attributes. The Office of the Associate Dean, Undergraduate Studies, and Department Heads, have been actively compiling the course materials, documents, assessment activities, and so forth, in preparation for the upcoming site visit. Recently the Faculty has hired an accreditation coordinator to assist with the preparation of extensive materials that will be required for this new CEAB assessment methodology. Also, FEAS has been working closely with DELTS to develop the new graduate attributes methodology for transitioning of our curriculum to new outcome-based programming and assessment. This successful partnership with DELTS has effectively supported the objectives of Memorial’s Teaching and Learning Framework and will be continued and expanded in 2015-16.

The research activity in the Faculty has grown significantly over the past year. Industry sponsored research chairs in the Faculty have recently submitted proposals to the NSERC Industrial Research Chair program. Some selected highlights of key successes over the past year include the selection of two Canada Research Chair appointments: a Tier 2 CRC in Environmental Engineering (Dr. Bing Chen); and a Tier 1 CRC in Offshore Safety and Risk Engineering (Dr. Faisal Khan). Over the past year, the Faculty has significantly increased its success rate in the NSERC Discovery Grant program to about 70% (well above the national average) and will continue to work collaboratively with the Office of the Vice President, Research, to identify ways of making further improvements in this program as well as others. New research chairs (Statoil – Dr. Enamul Hossain and Dr. Sohrab Zendehboudi; Wood Group – Dr. Hodjat Shiri) have been appointed recently. Also, during this past year, the Faculty produced its first annual research report. This publication highlights many of the Faculty’s research accomplishments.

This progress report provides a summary of the main achievements and initiatives achieved over the past towards meeting the objectives of the FEAS strategic plan – Vision 2020.

2 Alignment with MUN’s Capstone and Strategic Frameworks

MUN's Capstone brings together the university's three strategic frameworks in teaching and learning, research and public engagement. Our Vision 2020 goals, priorities and action plans are consistent with the directions outlined by these strategic frameworks of Memorial.

Memorial’s Capstone Goals	FEAS Vision 2020 Goals
Teaching and Learning Framework	
1. Build relationships – Memorial University establishes connections among educators, students, staff and members of the broader community.	1.2.2, 3.2.2
2. Engage people – Memorial University recognizes that engagement is important in all settings where teaching and learning occur.	1.2.4

3. Create synergies – Memorial University maximizes the benefits that occur when various components of the teaching and learning enterprise come together.	1.2.3
4. Focus on the learner – Memorial University engages its students, educators and staff to develop curricula, programs, support services and spaces that address learner needs and support achievement of clearly identified learning outcomes.	1.1.4, 4.3.1
5. Provide support – Memorial University supports educators, staff and all students it admits by aligning its policies and procedures with the distribution of resources to advance teaching and learning.	1.1.1, 4.2.1, 4.2.2, 4.4.2
6. Commit to quality – Memorial University provides high quality curricula and learning experiences that are current, relevant, creative, innovative and appropriately challenging.	1.1.3, 4.3.3
7. Foster transformation – Memorial University provides a supportive and inclusive environment that fosters individual transformation.	1.2.1, 3.3.5
8. Value contributions – Memorial University recognizes and values the contributions of all individuals who are involved in the teaching and learning enterprise.	1.1.2, 4.1.1
9. Acknowledge responsibility – At Memorial University, educators, students, staff and the institution as a whole share responsibility and accountability for effective teaching and active learning.	1.1.5, 1.2.5, 4.4.1
10. Support lifelong learning – Memorial University models enthusiasm for continuous learning.	3.3.4
Research Framework	
1. Attract, retain, support and celebrate people engaged in and supporting research.	2.1.2, 2.2.3, 2.3.2, 4.3.2
2. Support an environment of research collaboration.	2.1.4, 2.2.2, 2.2.4, 3.1.1
3. Engage with community partners and collaborators locally, nationally and internationally.	2.3.1, 2.3.3, 2.3.4, 3.1.2
4. Support fundamental and applied research excellence in areas of strategic opportunity.	2.1.1, 2.1.3, 2.2.1
Public Engagement Framework	
1. Make a positive difference in our communities, province, country and world.	3.2.3
2. Mobilize Memorial for public engagement.	3.2.1, 3.3.6
3. Cultivate the conditions for the public to engage with us.	3.3.1, 3.3.3
4. Build, strengthen and sustain the bridges for public engagement.	3.3.2

Table 4: Alignment of Vision 2020 and MUN's Capstone

The Vision 2020 plan will be updated and adjusted over time to align with MUN's Capstone timeframe. It will be directed to support the strategic directions set out in Memorial's strategic frameworks.

3 Vision 2020 Progress Report

In this section, the following four pillars of the FEAS strategic plan – 1) teaching, 2) research, 3) partnerships, and 4) workplace – will be outlined, with specific outcomes that have been achieved over the past year towards the goals and action items on those priorities.

3.1 Creating the Conditions for Student Success

The Faculty has achieved a number of significant outcomes and accomplishments over the past year as part of the Vision 2020 goals for enhancing student success to provide an exceptional teaching and learning environment.

Goal 1.1: Support Teaching Excellence

- FEAS introduced its first Teaching and Learning Chair (Dr. Janna Rosales) who presented a plan to positively impact the teaching and learning culture in the Faculty, bring a focus to scholarship in this area, and coordinate new T&L engagement initiatives.
- FEAS supported 7 faculty members to participate in MUN's Project Engage (2nd year).
- All candidates for faculty positions were required to present an undergraduate lecture after which student feedback is considered carefully in the search process.
- Lecture capture was used to improve learning in several courses, e.g., ENGI 1020 (Introduction to Programming), 4430 (Advanced Calculus for Engineering).
- Department Heads met with each class of students each semester to gather feedback regarding courses / instructors, and also follow up on low CEQ scores, to provide constructive feedback to instructors and suggestions for teaching and learning.
- ECS developed a 3-year plan for the purchase, deployment and continual renewal of computing resources to enhance teaching and learning.
- Two new academic streams were introduced in Process Engineering – 1) Process; and 2) Oil and Gas – with the first Term 6 groups in Fall 2014.
- Several faculty members participated in DELTS Innovative Teaching activities.

- Best teaching practices were regularly shared and discussed at departmental meetings, T&L workshops were held, and faculty members participated in special courses / sessions offered by DELTS over the past year.
- Curriculum sub-committees were established to review learning outcomes for courses, lab instruction, course content, and development of new courses.
- New industry standard computer software was introduced for analysis and design in Civil Engineering courses.
- Civil Engineering courses are being reviewed to enhance teaching and learning effectiveness, create a depository for all lab manuals in courses, and update experiments in the labs.
- Courses have been redeveloped in partnership with DELTS, e.g., ENGI 6749 (Construction Planning, Equipment and Methods – offered in Fall 2014 for the first time).
- Several laboratories were upgraded over the past year, e.g., Mechanics of Solids Labs, Environmental Lab, Geotechnical Lab, Fluids Lab, Structural Lab, Asphalt Lab (in process).
- New technical communication support is being introduced through a generous donation to the Engineering One Help Centre.
- FEAS is facilitating the application of AVEVA's Plant Design Management System (PDMS) software through MCL 3D Training Ltd. as a new design tool in various engineering courses.
- Vena software was acquired to manage a continuous improvement process in courses.
- A new "Engage" proposal was submitted to work with teams of first year instructors to incorporate D2L support.
- Lecture capture facilities have been incorporated in major classroom upgrades.
- A database was created in which common course outlines with learning outcomes are collected for all courses as part of a data mining project being incorporated into Vena.

Goal 1.2: Encourage Student Engagement

- Engineering Co-op Education became decentralized and an integrated unit with FEAS in the Fall 2014 and a retreat was held to discuss opportunities / challenges with Co-op Education and job development activities.
- Co-op work term development in view of CEAB Graduate Attributes is commencing with the development of online support modules and curriculum initiatives.
- Direct support through growth funding was provided for internal work term placements of “critical” students as an interim measure.
- The Co-op Program Manager position remains unfilled but progressing to fill the position.
- CAFCE accreditation documents were submitted in July, 2015, for renewal of Memorial’s Engineering Co-op accreditation.
- Course outcomes / objectives are being reviewed regularly by departments and updated as part of the accreditation process.
- A departmental ECE committee has been created to review opportunities / challenges of the Computer Engineering program.
- A 1st Mechanical Engineering Symposium was successfully held in the Summer 2015:
 - 4 parallel sessions of 6-7 presentations from undergraduate and graduate students discussing their work term projects and graduate research;
 - 10 round-table discussions addressing topics like teaching effectiveness, women in engineering, and others;
 - Morning sessions with 40-60 students in attendance and the afternoon sessions of 15-20 in each of 10 parallel discussions;
 - Best presentation awards were given to one graduate student and one undergraduate student;
 - Students provided feedback that it was an excellent learning experience.
- The new Director of 1st Year Engineering has met regularly with Engineering One students, developed survey tools, and submitted a proposal for a jointly funded position to run an “Engage” project for first year instructors.
- Software application deployment was improved in engineering labs to reduce the lab downtime and ensure that students have access to the latest versions of software.

- ECS manager is meeting monthly with department heads to discuss student IT needs and how engineering labs / design rooms are continually monitored, maintained and improved.
- Classroom revitalization projects were completed to improve the teaching and learning environment:
 - EN 4034, 4035, 2007 – classrooms painted, ceiling tiles replaced, windows cleaned, new desks/chairs and posters added to walls;
 - classrooms EN3000 / 29 – audiovisual to be upgraded to become a dual classroom;
 - EN 2041 – graduate student space updated with new desks, lockers, painted, flooring;
 - EN 4033 to become new teaching space for graduate courses;
 - EN 1019 (Machine Shop) under review to be reconfigured for better flow of students;
 - EN 2042A (Mechanical Design Lab) under review to be reconfigured to create quiet study area and group meeting area.
- Working groups were established to review / redesign elements of Engineering One courses, namely ENGI 1020 (Introduction to Programming) and 1040 (Mechanisms and Electric Circuits) to enhance student engagement and preparedness.
- A user group has contributed to the design and layout of student learning spaces in CSF so as to support varied teaching styles and technology.
- The WISE summer student participation was again successful, the program was enhanced, and additional funding support was provided in place of funding cutbacks by other external partners.
- The aboriginal admissions policy was used and the aboriginal ambassador project is being renewed.
- A project was completed for Banner historical undergraduate data to be loaded into Vena so as to have better metrics for review and program improvements.
- The high percentage of female applications from NL and Canada was maintained at the previous year's level where Memorial led the country.
- The first Engineering One female professor was introduced in first year.
- A Learning Pedagogy Lab has been planned for the ECE program once CFS is completed.

- Numerous courses have added industry site visits, e.g., ENGI 3600, 8694, and others in progress to be implemented next year for ENGI 8691, 8692, 6602, 6671, 5671.
- Many graduate student seminars were held through EDGE and a seminar series was organized by EGSS and ADGS.
- Exit surveys for graduate students were recently made available for graduating engineering students through SGS.
- Guest lectures from industry speakers were added in various courses, e.g., ENGI 6961, 8676, and regular ship visits in EN 3001.
- Renewal and upgrades of laboratory equipment were completed in Process Engineering, including a Geomechanics Frame for ENGI 6602 / 9117, Catalytic Reactor for ENGI 6631 (Reaction Engineering), and upgrades for the Process Control Lab for ENGI 7621 (Process Control)
- ONAE faculty members reviewed and updated the course learning outcomes as part of the course descriptions.
- TAs were better prepared and supported through TA training sessions and Outstanding TA Awards each year to recognize TA performance.
- There was an integration of software packages (ANSYS, DelftShip) and an increase of “hands-on” content in laboratories for a range of ONAE courses.
- A new schedule was arranged for a rotation of ONAE courses among 3 faculty members every 3-4 years to introduce new content into courses and develop more uniform content – ENGI 3001, 4011, 5003, 6003, 7000, 8000, 8074.
- ONAE student groups were active in international societies – SNAME and RINA – and guest speakers from the SNAME Student Section, NSERC CREATE and Industry / RINA were engaged in Term 8 ONAE design projects.
- Civil Engineering student competitions were successfully held such as the “Cube Competition” and CSCE Annual Bridge Building Competition, from which 5 teams competed and the winning bridge held an astounding 2,889 lbs!
- Numerous industry site visits were incorporated into Civil Engineering courses to enhance student learning:
 - Capital Ready Mix plant;
 - Construction sites;

- Windsor Lake Water Treatment Plant;
 - Robin Hood Bay Waste Management Facility;
 - Landfill site, local river basins and mining sites.
- A “Civil Engineering Night” as successfully held, including speakers in environmental engineering courses; a student panel discussion on experiences in Civil Engineering and extracurricular activities; and a keynote presentation on the topic of design and construction considerations for the Hebron Gravity Based Structure.
 - Several new graduate programs are under development including Process Engineering (MEng and PhD), new course-based programs in energy systems and policy, and offshore / ocean engineering.

In the Fall of 2014, the Division of Co-operative Education was devolved to academic units. Due to recent economic conditions and other factors, co-op job placements have been challenging in the past few terms. Additional funding from the Faculty has been allocated from time to time to help secure work term placements for “critical” students who will not graduate unless they have four work placements during their program. A retreat was held to discuss strategies and increase job development activities, strengthen existing relationships with employers, and increase co-op opportunities with new employers including outside the province, especially when more future work terms will be required as part of the Faculty Growth Plan.

The Engineering One Help Centre has continued to provide effective support to first year students in Engineering to transition from high school to the academically challenging engineering program. A donor (Fred Cahill) has generously supported this initiative financially, as well as a lecture series.

With generous support from corporations, the Faculty continued the GirlQuest program to increase awareness of engineering and science among young girls in the province. The program received additional support this year and was offered again during the Summer 2014.

The Dean and Senior Development Officer have been actively engaged in discussions with potential donors in support of fundraising initiatives including, but not limited to: lab naming opportunities; equipment / furniture renewal and upgrading in classrooms and labs; and a new centre in innovation, commercialization and entrepreneurship, in collaboration with the Faculty of Business Administration.

Following a consultant’s report on the promising potential of college bridging programs, the Faculty is actively engaging the Marine Institute (MI) and the College of the North Atlantic (CAN) as partners in bridging programs to provide advanced standing to college graduates for entry into engineering. Curriculum development is underway to potentially enable a 1-semester transition program at MI for technology diploma holders to receive adequate preparation and gain advanced entry into an undergraduate engineering program.

The Faculty is actively pursuing a major initiative and fundraising activity to launch a new Petroleum Engineering program, as part of the Faculty Growth Plan. The development of a detailed curriculum is underway and expected to be brought forward by Faculty Council during the Fall 2015. Courses in a new program would include, but are not limited to: upstream petroleum production; reservoir modelling; subsea production systems; drilling; safety, risk and reliability; among others.

The Faculty hired a database developer in 2014 to provide better information management capabilities and improve efficiencies of data analysis. Also, the Faculty has worked closely with the student recruitment office to focus and expand our recruitment efforts, within the province and others (particularly Ontario and Nova Scotia), in order to achieve our enrolment growth targets. The efforts aim to improve the quality, access, and diversity of the engineering programs, and are consistent with Memorial's Teaching and Learning Framework.

Engineering graduate student enrolment has continued to climb rapidly over the past year, totaling well over 500 graduate students (see Tables 2 and 3). Various recruitment efforts abroad to increase qualified applicants to our graduate programs in engineering are expanding. The new post-graduate diploma program in safety and risk engineering that was approved and launched in September, 2013, is proving to be a success as expected.

3.2 Increasing Research Capacity

As described below, excellent progress has been made over the past year on our Vision 2020 goal of increasing research capacity and intensiveness.

Goal 2.1: Attract, Retain and Support Research Activities

- FEAS Discovery Grant workshops were held in the Summers of 2014 and 2015 to share best practices and provide advice to successfully secure a Discovery Grant.
- FEAS improved its success rate to 70% for NSERC Discovery Grants (well above the national average and a 2nd consecutive year of higher success rates).
- Various efforts have been undertaken to increase the visibility and profile of research activities, including a modernized website, research posters placed around the SJ Carew Engineering building, articles in Benchmarks, and features on the website.
- Several NSERC Industrial Research Chair proposals have been submitted, and other research chairs are in various stages of approval (2 CRC chairs, and 2 research chairs in Arctic / Subsea engineering).

- An on-going partnership with SGS and IC on international graduate student recruitment had an emphasis on sponsorship programs, particularly Vietnam (VIED), China (CSC), Iraq (Iraqi MOHE), Saudi Arabia (Saudi MOHE), Mexico (CONACYT), and Brazil (SWB).
- Research project visibility and promotional activities were expanded over the past year, including more frequent “Lunch & Learn” research seminars, a web page renewal initiative (with E-solutions) and a first FEAS Annual Research Report.

Goal 2.2: Support Research Excellence and Focus on Areas of Strategic Importance

- Two new joint faculty appointments with Medicine in Biomedical Engineering were made to encourage and diversify research in this emerging area of strategic importance.
- FEAS hired an external Project Manager (Ashley Smith) to oversee capital projects for the Faculty (currently over a dozen renovation projects in various stages of design, development and implementation).
- Numerous old unused units of equipment were discarded to free up lab space for other researchers and their incoming new projects.
- Space reallocations were made to support growth of research activities: EN 1026A – Geotechnical Advanced Laboratory Testing; EN 1020J - Composite Structure Fabrication Laboratory; and several others.
- Staff positions were hired over the past year in support of engineering expansion: additional lab technologist; grants facilitation officer; web specialist; accreditation coordinator.
- A new research centre and laboratories were established in Process Engineering: Center for Safety, Integrity and Risk Engineering (proposal review in progress); HMDC Enhanced Oil Recovery Lab (official opening Fall 2014); and others.
- New multi-disciplinary research initiatives are in progress, including but not limited to, Marine Icing, Wind Turbines, Energy Storage, Ice Abrasion on Concrete Structures, Oil Spill Response, Arctic Engineering, Biomedical Engineering, and numerous others.
- Guidelines for the calculation of indirect costs of research in FEAS were developed in line with the university’s updated policy.
- An "impacts initiative" working group was formed to collect and describe the most significant positive impacts of our faculty on our community, nationally and internationally, as well as a communications plan in the form of news features, website postings, banner stories, newsletters, and so forth.

Goal 2.3: Expand Engagement with Partners

- Support was provided to faculty members for the development of new partnerships, for example, Arctic-focused research with partners in Norway and Russia, and ice mechanics collaboration with Shell.
- New major partnerships were established with Norway on ice mechanics and concrete durability with Kvaerner / NTNU, and oil spill response studies with SINTEF / C-CORE.
- Faculty members established new research partnerships with communities in the province, e.g., Ramea (Dr. Kevin Pope), drinking water and waste management in remote communities (Dr. Tahir Husain).
- MOUs were established or under development to expand partnerships in research and education with institutions in Norway (NTNU, University Centre in Svalbard, University of Stavanger), Russia (Sakhalin State University, Far Eastern Federal University), India (Indian Institute of Technology – Madras and Ahmadabad, Amity University), Australia (University of Tasmania), Malaysia (University Technology – Malaysia and Petronas).

In the Fall 2014, the Suncor Offshore Energy R&D Center officially opened its doors. Suncor Energy and RDC provided funds for the expansion of researcher office space in the SJ Carew Engineering building. The Suncor Energy Offshore R&D Centre was completed in April 2014. This expansion includes new office space for research chairs, research engineers and graduate students who are engaged in major collaborative research projects with industry related to offshore energy. This center has provided much needed graduate student and research staff space. The Faculty continues to experience space challenges specifically with high-bay laboratories. A new project is currently underway with detailed engineering and architectural design of a high-bay laboratory expansion in the SJ Carew Building.

3.3 Expanding Partnerships

A significant number of advances were made over the past year towards our Vision 2020 goals of expanding external engagement, outreach and partnerships with industry, high schools and other organizations.

Goal 3.1: Expand Partnerships that Contribute to Research

- Two new joint faculty appointments in Biomedical Engineering aims to expand partnerships with Medicine and develop a new Biomedical curriculum offering in partnership with both Medicine and Nursing.
- Additional new faculty cross-appointments were established with C-CORE researchers.

- Faculty members on sabbatical leave (Dr. Siu O’Young, Dr. Eric Gill, Dr. Ralf Bachmayer, Dr. Bing Chen, Dr. Steve Bruneau) traveled extensively to collaborate with other universities and institutions abroad.
- Dr. John Quaiocoe serves as an external PhD student co-supervisor at the University of Mines and Technology (Ghana).
- Efforts in progress are expanding partnerships with NRC / OCRE, including for an existing partnership on Marine Safety, and a recent joint proposal on Large Scale Riser Experimentation.
- Student and/or faculty exchanges were established or under development with the following organizations: University of Stavanger (Norway); Norwegian University of Science and Technology; MEOPAR ; DARPA/BAE; Kvaerner.

Goal 3.2: Expand Partnerships that Contribute and Strengthen our Programs

- A major new joint initiative with Business received \$1.1M in funding from BTCRD / ACOA to launch a new “Memorial Centre for Entrepreneurship” (MCE) and foster increased entrepreneurship among students and faculty.
- The new MCE initiative includes a revised Entrepreneurship Co-op initiative, Working Group to pursue a new joint Engineering / Business curriculum offering(s), Learn start-up pilot initiative, and redesigned / new courses related to entrepreneurship.
- Business / math minors are being developed for all programs, and departments are examining more specific joint offerings, e.g., Chemistry minor.
- An MOU was established with the University of Mines and Technology (Ghana) and several others are under development with high ranked universities in China (specifically for 3+1+1 programs) to expand international partnerships related to ECE programs.
- An MOU with IIT Madras and the University of Amity, India, for student exchange and joint programs was completed.
- Detailed curriculum, bridging courses and program options have been developed for the new bridging program in partnership with CNA and MI.
- Process Engineering faculty members offered courses at Sakhalin State University, Russia, and a guest lecture and short course at the University of Tasmania (Australia) to strengthen research and teaching collaborations.

- Active oversea ONAE student exchanges were held through projects with Kvaerner, CREATE and LRET.

Goal 3.3: Improve Engineering and FEAS Profiles in the Community

- Geographic engagement has been significantly improved as our new Senior Development Officer (SDO; Carly Ainlay) identified and pursued strategic alumni markets in Newfoundland, Calgary, Toronto, Halifax, Houston and Ottawa.
- Dr. Dennis Peters successfully served as the Chair of the Board of Directors of PEGNL (Professional Engineers and Geoscientists of Newfoundland and Labrador) and Vice-Chair of Engineers Canada's CEQB (Canadian Engineering Qualifications Board).
- Dr. John Quaiocoe is serving on the Board of Directors for Nalcor – Muskrat Falls.
- Dr. Leonard Lye serves as Vice-Chair of the PEGNL Registration Committee.
- Examples of fundraising successes over the past year (Carly Ainlay):
 - Activity Metrics: over 200 face to face meetings with individual alumni and corporate partners were successfully completed by the Summer 2015;
 - More than \$974K in donor commitments to support undergraduate and graduate scholarships, programming and infrastructure priorities;
 - Engineering Reunion results: Reunion 2012 (80 alumni attended, including from Ontario, Alberta, Mecca, New Brunswick and Newfoundland); Reunion 2013 (130 – from Ontario, Alberta, California, British Columbia, Quebec and Newfoundland); Reunion 2014 (80 – from Alberta, Ontario, British Columbia, Australia, Nova Scotia, Texas, New Brunswick, Northwest Territories and Newfoundland); and Reunion 2015 (19 – from Ontario, British Columbia, Norway, Alberta, Texas and Newfoundland).
- The Faculty successfully hosted its 3rd annual “Open House” to increase the visibility of engineering programs in the community, and attract future prospective students.
- The Faculty participated in high school fairs and SLE in Ontario.
- Faculty members participated and contributed as judges at the Eastern NL Science Fair.
- Dr. John Quaiocoe served as Chair of the PEGNL Awards committee.
- The Faculty website was updated to reflect a new design with enriched content and accessibility on mobile devices.

- Many faculty members were actively involved in national and international professional societies, e.g., IEEE, PEGNL, ASME, SNAME, AIAA, CSCE, and many others.
- Dr. Jonathan Anderson was a “Speaking of Engineering” speaker and PEGNL Eastern Chapter luncheon speaker.
- The 24th annual IEEE NECEC conference (Newfoundland Electrical and Computer Engineering Conference) was successfully held and the 25th NECEC is planned for November 5, 2015.
- ECE faculty members contributed to CodeNL – an organization advocating for more Computing education in the NL school system; “Code is Cool” program at Frank Robert’s school (2015-16); and high school councils, e.g., Dr. Glyn George – School Council of Booth Memorial High School for 15 years.
- Faculty members organized and led numerous external events, conferences and other public engagement:
 - 14th Canadian Workshop on Information Theory (Dr. Octavia Dobre);
 - 3rd Workshop and Symposium for Safety and Integrity Management of Operations in Harsh Environments (Dr. Faisal Khan);
 - International Conference on Marine and Freshwater Environments (Dr. Bing Chen);
 - SPE Deepwater Workshop (Dr. Faisal Khan, Dr. Steve Butt, Dr. Lesley James);
 - ASME OMAE Conference (Dr. Wei Qiu);
 - Society of Core Analysts (SCA) 2015 Conference (Dr. Lesley James);
 - NL Angels Network (NLAN) Board of Directors (Dr. Steve Butt).
- Additional new outreach activities include library interactions, girl-guide program and a potential new mobile “maker space” in the SJ Carew Engineering Building.

Collaborations between Engineering and C-CORE continue as the Faculty seeks to strengthen relationships between the two units with mutual benefits. C-CORE personnel have contributed to teaching, graduate student supervision and other research collaborations with FEAS. Some engineers at C-CORE are cross-appointed to Engineering and more appointments are expected in the future. The CARD Chair in Ice Mechanics, Dr. Rocky Taylor, is supported financially by C-CORE for a period of 5 years in areas of mutual interest to both C-CORE and FEAS. This appointment will further strengthen the relationship between Engineering and C-CORE, and will better position both units to attract major research projects.

3.4 Fostering a Distinguished Workplace

The Faculty has made steady progress on many of the Vision 2020 goals for a distinguished workplace.

Goal 4.1: Promote a Culture in which All Work is Valued

- The 2nd annual Dean's Awards ceremony was held to recognize excellence in teaching, research, academic service, staff service, graduate student supervision, and outstanding contributions (external).
- 2014 Dean's Award recipients were: Dr. Bing Chen (Research Excellence), Dr. Yuri Muzychka (Research Excellence), Dr. Amgad Hussein (Teaching Excellence), Dr. Octavia Dobre (Excellence in Graduate Student Supervision), Adrian Dobre (Exemplary Service to the Faculty), Caroline Koenig (Exemplary Service to the Faculty).
- 2014 President's Award recipients were: Dr. Faisal Khan (Excellence in Graduate Supervision), Dr. Leonard Lye (Exceptional Community Service), Dr. Geoff Rideout (Outstanding Teaching).

Goal 4.2: Promote Excellence through Personal Growth

- Employees were encouraged to further their education and enroll in applicable training and professional development programs.
- Recent examples of staff member participants in lifelong learning opportunities over the past year include the Supervisory Skills Development Program (2); Management Development Program (2); Banner Training in Finance / HR (9); NSERC sessions (3); MCSA Windows Server (1); Apple Support Training (1); Microsoft Excel (3); Emotional Intelligence for Administrative Professionals (1); Adapting to Change: Managing the Transition (1); Undergraduate Studies (4); Graduate Studies Continuance (2).
- Mentors were established for numerous new faculty members.

Goal 4.3: Provide Adequate Physical Work Space for Employees and FEAS Activities

- Workspace renovations are currently in various stages of completion:
 - Departmental Administrative Office – EN 3000 A / 3029B renovations to be completed by August 2015;
 - Purchasing / Receiving Office – expected move to the SJ Carew Building 1st Floor by early Fall 2015;
 - Finance staff members will move to vacated purchasing / receiving office, EN-4007;
 - Dean's / Undergraduate Studies / 1st Year / Co-op Offices – renovations expected to be completed by late Fall 2015;
 - EN 4043 to be converted into two faculty offices;
 - Reassigned spaces in Earth Sciences to be repurposed for engineering expansion;

- Chairs, podium and presentation equipment upgraded in ONAE room EN 2078.

Goal 4.4: Promote a Safe, Healthy and Respectful Work Environment

- The Faculty continuously promotes safety in the workplace through safety moments at the beginning of meetings.
- The OH&S Building Committee has re-elected the Co-Chairs (Dr. Ken Snelgrove, Barb Elliott), created new Terms of Reference, and it was cited as being the leader on campus with regards to OH&S Building Committee compliance.
- Staff members attended safety related training courses / sessions: Overhead Crane and Sling Course (5); Hydraulics (3); First Aid, CPR and AED (7); WHMIS (2); Transportation of Dangerous Goods (1); Arc Flash and Low Voltage Safety (2).
- Numerous social events were enjoyed to build camaraderie:
 - academic year kick-off meeting / social (September);
 - Year in Review meeting (December) including breakfast and award presentations;
 - faculty / staff social club activities - membership increased to 73; Spring Semester Kick-off Coffee Break; End of Summer BBQ; Family Holiday Party; Faculty / Staff Dinner & Dance; Holiday Potluck and Pancake Breakfast; fundraiser events (June Pizza Party, March Pizza Party); milestone events of members.
- The 8th Annual Staff Retreat was successfully held (October 2014) including a presentation from the Chief Risk Officer on emergency response / risk and health and safety; and a Team Building Exercise – FEAS version of “The Amazing Race”.

In the past year, the Faculty changed its organizational structure and created five departments. Effective May 2014, there were five departments within the Faculty, namely: Electrical and Computer Engineering, Mechanical Engineering, Civil Engineering, Process Engineering and Ocean and Naval Architectural Engineering. This transition has worked smoothly and efficiently over the past year.

Renovations of several spaces in the SJ Carew Building continue in order to accommodate the faculty growth and change of organizational structure to five new departments. A shortage of teaching and research lab space to accommodate our engineering expansion continues to be a challenge. Several new infrastructure projects are being developed to address this challenge, including CSF (Core Science Facility) and the high-bay lab expansion project.

The Faculty’s Social Committee, launched in 2013, continues its successful growth. Its membership has increased from 70% to 75% of faculty and staff. The social committee is the Faculty’s initiative of promoting a positive work environment in which all current and new

faculty and staff members can get to know their colleagues within a social setting and to celebrate the collaborative successes and accomplishments within our community.

During this past winter, the Faculty produced another edition of its annual report, entitled “Benchmarks”. This publication highlights many of the Faculty’s accomplishments throughout the past year. It is available for viewing on the Faculty’s website.

4 Progress Indicators

4.1 Faculty and Staff Data

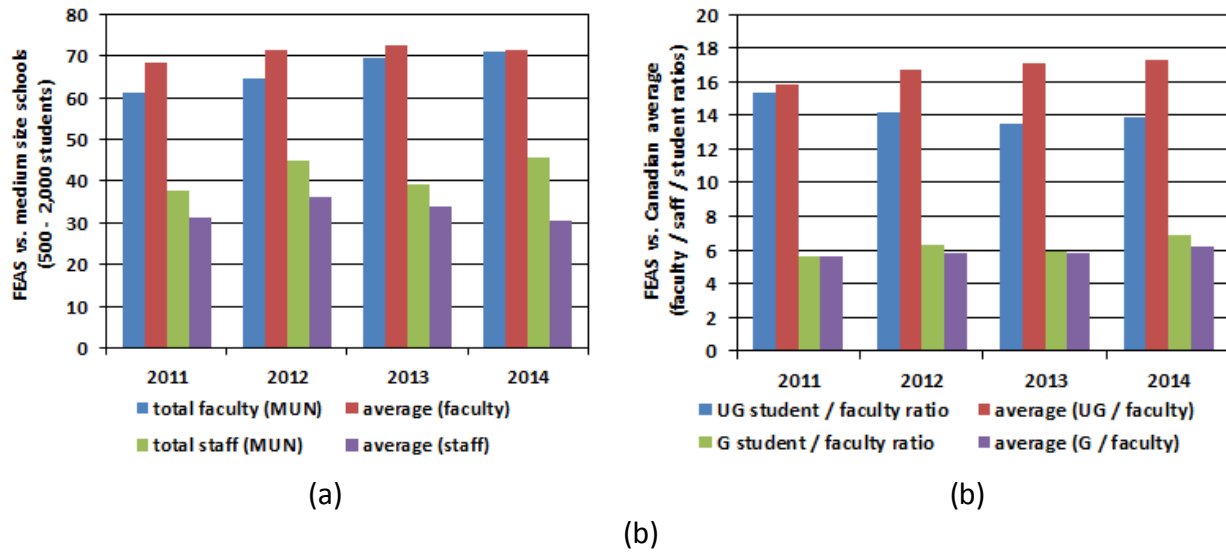


Figure 1: Number of FTE (a) faculty, staff and (b) per faculty ratios [2]

4.2 Student Data

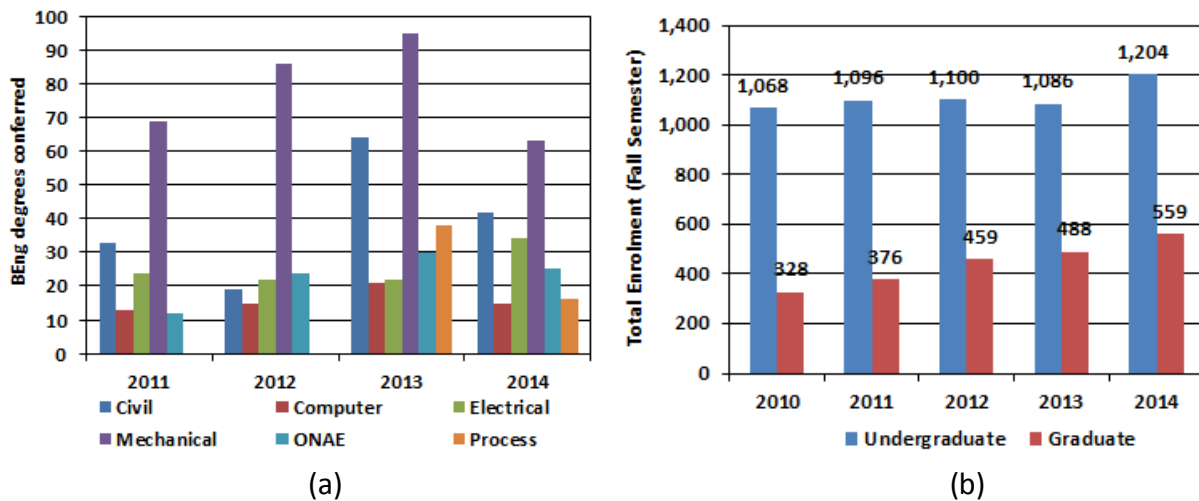


Figure 2: Student (a) BEng degrees by department and (b) total enrolments [3]

4.3 Research and Operating Funds

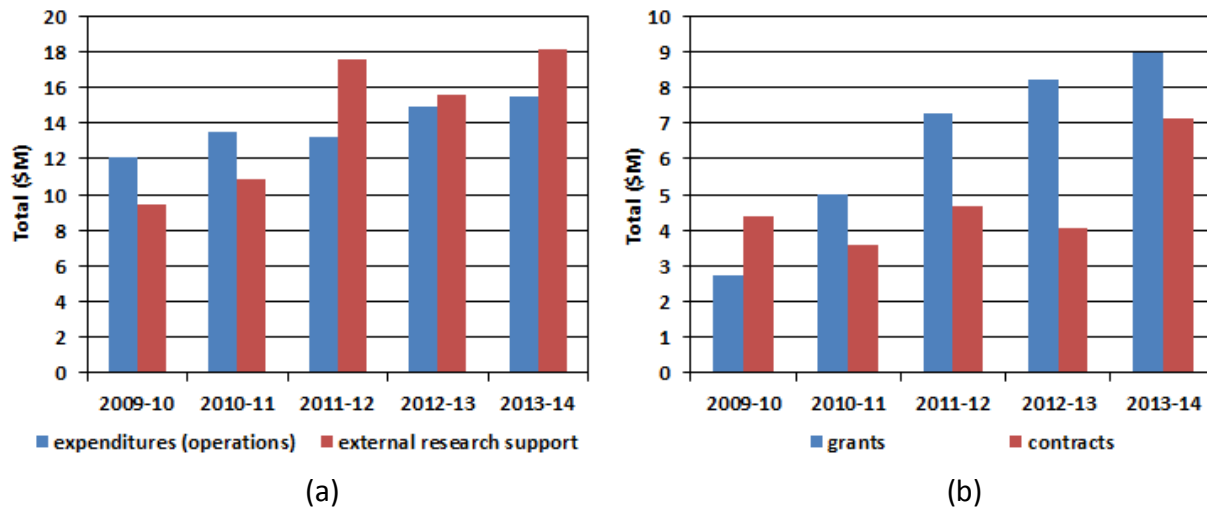


Figure 3: (a) Total expenditures, research support, (b) grants and contracts [3]

5 Acknowledgements

The input and contributions to this progress report from Department Heads (Amgad Hussein, Dennis Peters, Yuri Muzychka, Bruce Colbourne, Faisal Khan), Senior Administrative Officer (Barb Elliott) and Associate Deans (Andy Fisher, Leonard Lye, Tahir Husain) are gratefully acknowledged.

6 References

- 1) Vision 2020, Strategic Plan of the Faculty of Engineering and Applied Science, Memorial University, St. John's NL, July 3, 2013.
- 2) Resources Survey of Engineers Canada, National Council of Deans of Engineering and Applied Science, 2015.
- 3) Fact Books, Centre for Institutional Analysis and Planning, Memorial University, St. John's NL, 2009 – 2014.