Benchmarking the Faculty

Knowing exactly where the Faculty of Engineering stands has been one of the first priorities for Dean Christophe Pierre in his initial year. When he arrived last summer, he saw a chance to expand on reviews of Engineering’s academic programs just underway into a comprehensive analysis of the Faculty. The result was an unprecedented benchmarking process, covering everything from undergraduate teaching environment to graduate student support, from the state of Engineering’s facilities to faculty research output. Each department produced a detailed report and played host to external reviewers who met with faculty, students and staff during two-day visits to McGill.

“We concentrated on comparing ourselves to the other top Canadian universities,” says Jim Clark, Associate Dean (Academic), whose job it was to oversee the review in its entirety. Undergraduate engineering programs go through a regular accreditation process, but this review delved deeper into issues like completion and attrition rates, what sorts of teaching methodologies are being used in the classroom, and whether teachers are integrating new electronic tools into the pedagogical resources available to students, says Clark.

The review also included surveys conducted with students and faculty, with five lucky students winning iPods as a thanks for their participation. “We got a high participation rate and received good feedback from the students. And at the faculty level, they’re all quite positive and enthusiastic.” Comments were nonetheless confidential and frank, says Clark, “and that’s what we want in this process.”

External reviewers composed of highly ranked academics from Canada and around the world, in order to get the broadest possible perspective. Engineering’s seven departments and schools “all came across as strong. That’s something that became quite evident throughout the process. The external visitors realized that, and they’re all comparing themselves to us. They unanimously said what an elite institution we have, and we’re lucky to be at such a great place.”

Reviews identified certain staffing issues, some of which are already being addressed by the arrival of 15 new professors this year. Space for research is also a concern at a densely populated urban university like McGill. And funding for graduate student support is an important issue for the entire university, says Yue. “It’s an important benchmarking process, one that reflects our standing in research areas of strategic importance for the Faculty, bioengineering, nanotechnology, environmental engineering, and infrastructure planning.”

“Engineering’s reputation are fresh PhD graduates who either got their degree in 2006 or have spent a year doing postdoctoral work,” says Yue. “There are coming to McGill from other universities and research centres, like Shouair Nazhat, from University College London’s Eastern Dental Institute. Nazhat’s biomedical research deals in polymer-based bio-composites used in prostheses, tissue building and bone reconstruction.”

Bioengineering is already a strength in the Faculty and building on that natural, says Yue. “McGill has a very strong Faculty of Medicine and a very strong nursing school to work with them.” Sam Muftulak’s is in electrical engineering working in the fascinating area of brain-machine interfaces. “There are hardware, software and ethical implications of a brain-machine interface,” Yue notes. “But you have to know what’s the problem before you interface it, so he’ll be working closely with Medicine.”

New opportunities for interdisciplinary research with other faculties and schools also exist in exciting crossover engineering and science fields like nanotechnology. “We’ve managed to pick some of the best. It’s amazing how quickly this area has developed. A couple of years ago if you’d asked for people in the nano area, there wouldn’t have been that many.”

Other hires bring expertise in urban planning, new materials in aero-space engineering, and environmental engineering. Mechanical Engineering has hired Jeff LeSage, who is working on ways to store and release big amounts of energy to replace fossil fuel stocks that pollute the environment.

McGill’s international reputation has helped in recruiting top level researchers. But there is also the freedom these new experts are being offered. “We have some viable infrastructure for them, but they also have the challenge of creating something really different, more from scratch, as well as people who they can collaborate. And I think that’s why we’ve been successful in the hiring process.”

“We’ve had to plan for their success,” Yue points out. Optimizing space and intelligent planning of laboratories, for instance, can enhance collaboration between colleagues. Having top graduate students ready to work with the new researchers is also a key element.

“If you can offer them the best quality students, then that’s really a big draw,” Yue says. “If you get brilliant students, then your work will progress.”

“There are so many positive aspects. You become more creative as a byproduct.”

All of this means there’s a real sense of McGill as a hub of research activity, says Yue. “Going through the hiring process, there was definitely a lot of excitement.”

The hiring boom in Engineering will continue over the next couple of years, with the goal to bring the numbers of professors to 155.

Strong New Talent on Campus

“Hiring 15 people in one year: that’s a big job.” “Most of the new hires are fresh PhD graduates, a full of praise for the department chairs and hiring committees who have brought in more new faces to Engineering than never before in one year. “This professor in a job already on campus, the rest arriving in January. While much recent university hiring has been focused on replacing retiring professors, these newly hired academics are additions to Engineering’s faculty complement, bringing the total to 140 professors.”

The new faculty members are some of the top young researchers from Canada and around the world, many of them working in research areas of strategic importance for the Faculty, bioengineering, new materials, nanotechnology, environmental engineering, and infrastructure planning.

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Dear Graduates and Friends,

I have been a little over a year now since I took on the job of Dean of the Faculty of Engineering, and in that time I have seen much that confirms what a special place McGill is for its students, faculty and alumni.

One of the most striking things for someone new to the University is the enormous spirit and loyalty of McGill graduates. This was much in evidence at the recent McGill Homecoming.

Thousands of alumni returned to campus from around the globe, generations of engineers reunited at dinners and special events, and graduates of anniversary classes volunteered so much of their time and worked hard to generate support for the Faculty. This spirit is bound to McGill’s future; we are recruiting top level researchers. But there is also the human infrastructure to support faculty expertise with research scientists and other key personnel. There is much work to do to achieve our vision, but it is an inspiring time to be leading the Faculty.

We have also been benchmarking our programs through an unprecedented Faculty-wide review process that includes evaluations by external academic experts, allowing us to develop a detailed picture of our strengths and identify areas where we can take us even further. We are particularly dedicated to attracting and retaining the best PhD students, and support from visionary donors is helping us accomplish that with funding for new fellowships. There are ongoing improvements to physical facilities throughout Engineering’s seven buildings, and we are creating a service center for undergraduates that will be a hub of academic and career advising within the Faculty.

I encourage you all to take part in our exciting future, whether it is by keeping in touch with the Faculty and fellow graduates at McGill events; through the important ties the Faculty has with industry professionals in research initiatives and recruitment; or as a crucial part of the long tradition of philanthropy among McGill engineering graduates and friends. The dedication of McGill alumni to the alma mater is a source of great pride for me – that pleasure has quickly grown into a tremendous pride in the Faculty of Engineering and its graduates.

Dean Christophe Pierre, Monty Squire, BEng’51, and Principal Heather Murray Burt at the Dean’s Breakfast during Homecoming 2006.
The generosity of our alumni and friends is once again providing the Faculty with the resources we need as we move into a new era of Engineering at McGill. The past year has seen significant gifts made in support of graduate students from Lars Firing, Belling 50, and from the Vadasz Family Foundation. Both have recognized that the Faculty’s achievements are very much dependent on the high-level skills of these students who work in our laboratories and bring new ideas to the research arena.

Graduate students join our top-level researchers in creating solutions to today’s pressing technological and environmental issues, such as controlled supplies of fresh water and the search for renewable alternative energy sources. They will help speed the biomedical engineering revolution and develop new breakthroughs in advanced alternative energy sources. They will help press technological and environmental ideas to the research arena.

Recruiting and supporting the best candidates is vital to the Faculty’s research enterprise as we tackle these challenges head-on. Last year we completed a Faculty-wide strategic planning exercise that included surveys of faculty, staff and students, and detailed analysis of our teaching, laboratory and research resources, providing us with a comprehensive picture of where we stand and where we want to be.

Using the results, we were able to identify the Faculty’s areas of academic strength, where we are firmly positioned to contribute significantly to research and leadership in the future. We are strengthening our human capital by bolstering support for undergraduates and graduate students, and we will be creating endowed chairs in emerging interdisciplinary fields. We are already capitalizing on existing research strengths and are expanding our expertise through ongoing faculty recruitment.

With all of these exciting changes taking place, major fundraising efforts are crucial to maintaining McGill’s competitive edge. Donors now vie with each other on a global scale for students, faculty and research dollars. Donations at all levels are critical to provide us with the resources we need to realize our vision. The Faculty’s past successes are built on the loyalty of all of our donors, and its future vitality and growth are already being ensured by a strong, continuing tradition of support.

The engineering faculty of McGill Engineering with flexible funding to undertake a variety of programs, including undergraduate scholarships, student and professor research fellowships, educational outreach and student design teams. Gifts that can transform the way the University carries out its mission enable us to fund major projects like laboratory renewal and new facilities, expand graduate fellowships that promote advanced study and research, and recruit internationally renowned scholar for endowed chairs. There is a real momentum in our development activities that is already generating excitement among donors, faculty and students. We encourage all alumni and friends to take part.

Upon her return, Ene headed off to Geneva for a summer internship with the United Nations Environment Program, working for a division that monitors transboundary movements of hazardous waste.

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**New Engineering Student Centre**

The ground floor of the Frank Dawson Adams Building is in for quite a change later this fall. Construction has begun on the new McGill Engineering Student Centre, a service centre for undergraduate students that will cater to their needs from recruitment through to graduation and will occupy an entire hallway from University Street to the building’s main campus entrance. Anchorng the new services centre will be the Students Affairs Office, moving from its current space on the third floor of the Macdonald Engineering Building.

“The new centre is all about putting top priority on helping students with their needs,” says Subhash Ghoshal, Associate Dean of Student Affairs. “It will be a centre that provides them with different types of academic assistance at a location that is accessible to them.

The Student Affairs Office provides undergraduate students in engineering with academic and personal advising. Academic advising is wide-ranging and can include information about different engineering programs, student exchange opportunities, and the office is also there to help students who run into academic difficulties get back on track,” says Ghoshal. “We’re trying to provide an excellent student experience here and get them involved.”

Merging with Student Affairs is the McGill Engineering Career Centre, which provides undergraduates with important career advising and internships for the industry. The new comprehensive centre creates a smooth integration of both career and academic services. Other services for students that will find a home in the new centre include the Ace Tutorials program, funding for the centre is being provided by the Office of the Provost, and the Faculty will leverage that support with individual and corporate contributions. Construction is due to finish in December, with an official opening in the new year.

**Students Helping Students**

The Ace Tutorials program has been an enormously successful service for Engineering undergraduates for over 10 years. The drop-in program offers tutoring in engineering and math courses and is funded by the Faculty, thanks to the generous donations of alumni and friends.

Julia Weaver, the Vice-President Academic for the Engineering Undergraduate Society, manages the program and the student experts in the seven paid tutoring positions. A third-year undergrad in Mechanical Engineering, Weaver says that “any student who needs help can drop in during the office hours and get one-on-one coaching for free.”

“The tutors will help students learn the theoretical background for a subject, offer help with assignments - without necessarily giving answers – and try and guide them in the right direction.”

It’s an important resource for many students who may be having trouble with an assignment or just need to get a better grounding in a subject, and during exams sections the tutors schedule extra time to review material. Tutors are undergraduates themselves, with high GPAs and a knack for communicating with students who don’t necessarily feel comfortable asking questions. “We want them to be really open and helpful,” says Weaver, and student feedback confirms the tutors are achieving success in their work.

The plan to accommodate Ace Tutorials in the new Student Services Centre now under construction will help make Ace Tutorials even more accessible to students, and Weaver is eager to get into the new space.

**Impressive Credentials**

Cynthia Ene, a four-year Chemical Engineering graduate, already has a resume full of accomplishments that include working for the United Nations, supporting farmers in Ghana, and serving as a research assistant for a biotech company in California.

Upon her return, Ene headed off to Geneva for a summer internship with the United Nations Environment Program, working for a division that monitors transboundary movements of hazardous waste. “It was really interesting to work in a multi-disciplinary team with masters and PhD students,” she says.

Ene even managed to fit in a meeting with Secretary-General Kofi Annan as he stopped by to address staff on UN reform.

Other travels included an internship with Engineers Without Borders in Ghana. “I was working with the Ministry of Food and Agriculture and my project was specifically on upgrading local grain storage structures, and also giving workshops on nutrition and AIDS awareness.”

Ene has a passion for environmentally sustainable technologies and plans to solidify her chemical engineering knowledge when she graduates this year with some experience in the workforce, “perhaps working on water-related projects or environmental impact assessments.” Then it’s on to a master’s degree.

But first she has another trip to make, this time to Calgary, as one of the winners of the Shell Canada Student Award. With Ene is a meeting with Shell Canada President and CEO Clive Mather congratulating Cynthia Ene on her fight to save a trip to Shell’s oil sands in Alberta.

Ene recently completed a one-year academic exchange in environmental engineering at the Hong Kong Polytechnic University. “I was able to take three of my technical electives in an area that really interests me: environmentally sustainable development technologies. I learned so much and had the opportunity to travel through China to Shanghai and Beijing – I even took two Mandarin courses.”

The new doctoral recruitment program, people have picked up on it and taken notice.”

The event was an enormous success, says Plant. “There’s no question the weekend and all the associated activity had an impact on how many students said yes to McGill.”

Recruitment and financial support of doctoral students have to go hand in hand, and universities that are unable to offer competitive funding will often see the best students choose to go elsewhere. Engineering’s recruitment weekend coincided with new fellowship packages, thanks to an unprecedented infusion of funds from the Faculty of nearly $470,000 for the Dean’s Doctoral Student Recruitment Awards. These funds are being matched by equally vigorous support from departments and individual supervisors’ research grants, says Andrew Kirk. “It’s already making a difference and will continue to make a very big difference to our research productivity.”

The Dean’s Doctoral Student Recruitment Awards are providing 20 students with $75,000 each in support over three years, while additional awards of $13,000 a year in top-up funds have been offered to nine students who have won prestigious NSERC and FQMT fellowships. “If a student comes into McGill with one of those awards, we know right away that they’re very good,” says Kirk, who points out that the granting agency awards are only open to Canadian citizens or permanent residents. The new $75,000 awards allow McGill to provide funding to many exceptional international students as well. The students are pursuing research in areas ranging from architecture to nanotechnology to bioengineering, and the Faculty’s goal is to eventually expand funding to 50 PhD candidates.

“Canada has been very passive about recruiting PhD students, even at the more aggressive universities,” says recruitment weekend organizer David Plant, the interim chair of Electrical and Computing Engineering. “For our students, they found out about this new doctoral recruitment program, people have picked up on it and taken notice.”

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I have also been impressed by the warm welcome extended to me by colleagues in Engineering and from other faculties. My fellow deans and I have quickly built a great rapport and are working together to strengthen programs and develop more faculty initiatives with Management, Chemistry, Medicine and Agricultural and Environmental Sciences.

It has been a busy and exciting year for Engineering. Last fall, we began implementing the strategic plan that outlined our vision for the future of the Faculty and identified areas of strength in research and teaching. As a result of this, we are in the middle of an aggressive faculty hiring program, focusing on innovative, multidisciplinary areas of today’s engineering – bioengineering, nanotechnology, advanced materials, and environmental engineering. These fields complement our strengths in traditional engineering disciplines, creating bridges across departments and accelerating scientific discovery.

You will receive a pledge card to make a donation, be sure to mark it.

Your gift can support Engineering students directly. When you give to the Faculty, your gift can do twice as much for McGill students. If you’re an employee of a company with a matching gift program, your gift can be tax-deductible as much for McGill students.

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