

2. Culture of Excellence

At U of T Engineering, we promote and nurture a culture of excellence. We are committed to strengthening our position among the best engineering schools in the world, and continuing to innovate by enriching our offerings, fostering research excellence and preparing our graduates to lead in a complex global engineering environment. We measure our progress toward our organizational goals in numerous ways.

Awards and Honours

Our Faculty continues to be the leader among our Canadian peers in awards and honours, while also making excellent progress with our strategy to nominate junior faculty for early-career awards. In 2014, we earned 25 per cent of all major awards received by engineering faculty across the country with only 5.5 per cent of the overall faculty members in Canada. This is three times as many awards as the next most successful Canadian engineering school. Our early-career professors and alumni also won a remarkable number of major emerging leader awards, further reflecting our reputation for attracting the most talented young engineering scholars. These included:

- the American Society for Engineering Education's Top 20 under 40;
- the Alexander von Humboldt Fellowship for Experienced Researchers;
- the Borg Early Career Award;
- Ontario Professional Engineers Awards Young Engineer Medal; and
- the E.W.R. Steacie Fellowship.

In 2014 our professors and alumni received more than 40 international, national and provincial awards for excellence in their respective fields, including eleven 2014 and 2015 Canadian Academy of Engineering Fellows/Honorary Fellows, two Engineering Institute of Canada Fellows and the PEO gold medal. The success of our faculty in winning honours not previously awarded to U of T Engineering attests to the growing impact of our research and innovation. These awards included the Ernest C. Manning Principal Award, Foreign Associate of the Institute of Medicine of the U.S. National Academies of Science and the L'Oréal-UNESCO "For Women in Science" Laureate for North America. In 2015, the University of Toronto also honoured our Faculty with three Inventor of the Year awards, three Distinguished Professorships, the Vivek Goel Faculty Citizenship Award, and one University Professorship.

U of T Engineering is also proud of the awards we received in recognition of our outstanding educational and teaching achievements, such as the Joan E. Foley Quality of Student Experience Award, the President's Teaching Award and the Engineers Canada Medal for Distinction in Engineering Education.

Student and Alumni Achievements

Our outstanding students and graduate alumni have embraced innovation and excellence, and this past year, we continued to see their tremendous achievements. A number of companies were created including Onyx Motion, which is building the next generation of artificial intelligence for sports coaching, and Nvest, a social network that allows users to trade stock tips and transparently track their success. The Entrepreneurship Hatchery's 2015 Demo Day highlighted many new student startups including Kepler Communications, which hopes to revolutionize communications infrastructure in space and TeleHex, a unique telescoping hex key that simplifies bicycle repair.

Our talented and driven alumni include many entrepreneurs who created companies such as Cast ConneX, a startup that designs steel castings to strengthen buildings for earthquake resistance, and Attollo, a social entrepreneurship initiative aimed at improving the vocabulary of children in developing countries. Across diverse disciplines and sectors, U of T Engineering continues to have a profound impact, both locally and globally.

Diversity in Faculty and Student Recruitment

Our outstanding reputation and culture of excellence are key drivers in attracting world-class students and faculty. We continue to create opportunities for interdisciplinary and collaborative research and nurture engaging, experiential learning for students. In addition to last years' addition of three stellar cross-appointed female professors, we are currently undertaking an interdisciplinary academic search for three new faculty members, focusing on cross-disciplinarity, diversity, research and teaching excellence. The proportion of international and female students relative to our total enrolment continues to grow. In 2014, 31.9 per cent of the first-year class was comprised of international students, and 30.6 per cent were female. Our faculty members are also becoming more diverse, since 2005–2006, the number of female faculty members has doubled from 21 to 44, and the proportion of faculty members who are women has grown from 9.5 to 18.0 per cent — a testament to our recruitment efforts, but there is still progress to be made in this area.

Strategic outreach efforts to encourage more women to consider a career in engineering begin at an early age, through the Faculty's pre-university recruitment initiatives. We created and delivered a number of successful programs targeted at girls from elementary school age through high school to interest them in science, technology, engineering and math (STEM). For the fourth year in a row, we hosted Girls' Leadership in Engineering Experience (GLEE), a weekend-long program that empowers and inspires female engineering applicants by connecting them with women faculty, students and alumni. In 2015, 89 per cent of the 88 students participating in GLEE accepted our offer of admission, compared with 77 per cent in 2014. After the success of the inaugural Young Women in Engineering Symposium, we held the second annual event in October 2015, attracting more than 70 top female high school science students from across the Greater Toronto Area.

Curriculum Innovation

To strengthen our place as the premier engineering school in Canada and among the very best in the world, we continue to lead in evaluating and improving our curriculum and teaching within the Faculty. To that end, this year the first-year Core Curriculum Review Task Force delivered its final report and we are implementing recommendations coming out of the review. Areas of focus include improved first-year teaching and course delivery, in-depth mathematics and science curriculum reviews, integration between courses, and transition to the University learning experience.

We also assess our progress within departments and units through cyclical external or internal reviews. In 2014, we started the practice of conducting comprehensive internal reviews of academic programs, extra-departmental units (EDUs) and administrative units, structured with a self-study, two-day review team visit and subsequent report and administrative response. This past year, we initiated review of the Engineering Outreach Office and completed reviews of the Lassonde Mineral Engineering Program, the Engineering Communications Program and the Institute for Leadership Education in Engineering (ILead) resulting in enhancements in programming and sustainability. In 2015–2016, we will perform external reviews and academic leadership searches for Chemical Engineering & Applied Chemistry, Engineering Science and the University of Toronto Institute for Aerospace Studies. Our reflective department and institute self-studies, with subsequent external reviews, result in thoughtful recommendations and praise for the excellent quality of our educational programs, research, faculty and students, while noting any areas to fine-tune or adjust. This coming year we will also complete internal reviews of the Engineering Career Centre/Professional Experience Year (PEY) and the Cross-Disciplinary Programs Office.

CULTURE OF EXCELLENCE: YEAR 4 PROGRESS HIGHLIGHTS

2.1 Maintain a strong Faculty vision for excellence in engineering education and research.

- Maintained our position as the premier Canadian engineering institution and one of the best in the world in all international rankings
- Garnered 25 per cent of major national and international engineering awards received by engineering faculty across Canada, three times as many as any other Canadian engineering school, while representing only 5.5 per cent of Canadian engineering faculty (up from 21.3 per cent of 5.6 per cent overall faculty in 2013)

2.2 Measure our progress in achieving our mission and vision.

- Assessed our progress through key metrics and published our 7th *Annual Report of Performance Indicators* in September 2015
- Reviewed our actions towards achieving our Academic Plan goals and in October 2015 presented to Faculty Council our Year 4 Progress Report

2.3 Increase diversity, focusing on gender diversity among students and faculty.

- Initiated an interdisciplinary academic search for three new faculty members, focusing on cross-disciplinarity, diversity, research and teaching excellence
- Increased percentage of women academic staff to 18.0 per cent (up from 16.9 per cent in 2013–2014)
- Reached a tremendous milestone in increasing gender diversity among students: 30.6 per cent of 2014 incoming undergraduate students were female, the largest proportion of women in any incoming engineering class in Canada
- Achieved an impressive gender mix among all students in 2014–2015: 25.8 per cent of all undergraduate students were female (up from 24.8 per cent in 2013–2014) and 26.7 per cent of graduate students were female (up from 25.9 per cent in 2013–2014)
- In 2014–2015, our students came from 109 different countries: 25.8 per cent of all undergraduate and 27.1 per cent of graduate students were international students (up from 23.1 per cent and 24.6 per cent in 2013–2014)
- Continued to offer robust outreach initiatives to support strategic recruitment; for example, 89% of the 88 female high school students who attended the 2015 Girls' Leadership in Engineering Experience (GLEE), an event for female high school students with offers of admission to the Faculty, subsequently accepted our offers (up from 77% in 2013–2014)
- Held the second annual Young Women in Engineering Symposium, attracting more than 70 top female high school science students from across the Greater Toronto Area (October 2015)

2.4 Support the development of faculty members as outstanding engineering educators and researchers.

- Won a remarkable number of major emerging leader/early career awards, including the Ontario Professional Engineers Awards Young Engineer Medal and the E.W.R. Steacie Fellowship
- Held a lunch-time panel series for faculty on best practices in research, including a session on collaborative and partnership research
- Prepared junior faculty to apply for Early Research Awards (ERA) by hosting a panel called “Succeeding in the ERA” and initiating an internal expert review during the competition to critique each of the Faculty’s applications
- Enhanced the nomination process for disciplinary awards at the departmental/institute level by establishing awards committees in each unit
- Enhanced the Faculty’s Awards and Honours portfolio by adding a partial administrative position to build the capacity within units to develop nomination and award strategies
- Held the third annual First-Year Instructors Day, which helps ensure consistency in the student experience and raises awareness of the various support systems that are in place (September 2015)
- Initiated a year-long teaching and learning workshop series coordinated jointly by the office of the Vice-Dean, Undergraduate, the Teaching Methods and Resources Committee, and students in the Masters/PhD collaborative program in Engineering Education
- Hosted the biannual Educational Technology Workshop “EdTech” to help instructors share best practices for innovative teaching and learning (May 2015)

2.5 Support our students by strategic efforts to build upon educational, extracurricular and co-curricular experiences.

- Supported expansion of programs including the Peking University Cross-Cultural Capstone Design Projects and Brazil’s *Ciência sem Fronteiras*
- Signed memoranda of understanding with Shanghai Jiao Tong University, Warsaw University of Technology, and the National Institute for Materials Science (Tsukuba, Japan), and a letter of intent with CAF, the development bank of Latin America, to enhance and support various education and research collaborations
- Reached a record of 724 engineering students participating in the Professional Experience Year in 2014–2015 (up from 705 in 2013–2014)
- Stream-lined the process for student club funding by creating the Centralized Process for Student Initiative Funding (CPSIF) which allows student groups to apply to various funding resources from within the Faculty of Applied Science & Engineering in a single application
- Established new certificates in:
 - Communication;
 - Engineering Leadership; and

➤ Renewable Resources.

- Created a new minor in Nanoengineering
- Developed a new Engineering Science major in Robotics Engineering
- Launched minor in Biomedical Engineering
- Continued growth in minor enrolment and completion, with 31 per cent of 2014–2015 graduating students completing a minor
- Developed a list of major student awards to improve the process for student nominations; in conjunction with the Registrar, developed a process in which the committee responsible for allocating internal scholarships will also seek candidates for the above-mentioned student awards
- Experienced another successful summer program through The Entrepreneurship Hatchery; of the 50 teams (150 students) who applied, 37 teams (109 students) were accepted and 13 teams (42 students) presented at Hatchery Demo Day (September 2015)

2.6 Maximize the skills of our staff members and create opportunities to strengthen their performance and develop them as integral contributors to the Faculty's mission.

- Relocated the Human Resources office to the Fields Institute to improve service delivery
- Recognized the successes and contributions of staff through several Faculty awards
- Encouraged secondments throughout the Faculty as appropriate to enable staff to develop new skills
- Contributed to staff skill development for business administrative staff and student support staff through network groups and presentations from University experts on relevant issues, policies and procedures
- Offered three staff sessions on the services/mental health support provided by the Employee and Family Assistance Program and offered a mental health session to chairs and directors to assist in supporting staff and faculty

2.7 Increase staff retention and enhance succession planning within the Faculty.

- Continued to foster collaboration and communication between Human Resources, the Business Administration group and the Engagement & Development Network to share information and best practices
- Contributed to the engagement of faculty and staff with the first "Engineering Family Outreach Day", inviting children of staff and faculty from Grades 1 through 8 to take part in engaging, hands-on activities related to STEM

2.8 Build upon alumni involvement with the Faculty to share their world-based expertise and perspectives, to strengthen our reputation and to inspire the next generation of U of T engineers towards innovation and excellence.

- Continued to offer mentorship and sponsorship opportunities for alumni through The Entrepreneurship Hatchery

- Enhanced the “You’re Next” Career Network to strengthen the Alumni Mentorship Program
- Strengthened outreach and engagement through strategic events and topical seminars in the Asia-Pacific, Silicon Valley and Middle East regions, and through a new initiative that connects professors emeriti and retired staff with recent graduates
- Hosted 68 alumni events, with 13 taking place outside of Canada (San Francisco, Palo Alto, Turkey, Dubai and Asia-Pacific (Hong Kong, Korea, Singapore and Taiwan))
- Hosted our first Dean’s reception for parents, in conjunction with an alumni event in Dubai, to engage parents of current international students and raise the profile of the University in the region
- Proactively participated in events such as the U of T Arbor Awards to ensure dedicated alumni are recognized
- Supported alumni volunteerism, with more than 167 alumni participating in various committees and advisory boards at both the Faculty and University level
- Organized an engaging Spring Reunion with events including the Skule™ Young Alumni Reunion and Skule™ Reunion Picnic
- Expanded partnerships between our Engineering Recruitment Office and the Central Recruitment Office through:
 - a postcard campaign inviting alumni in key regions to serve as recruitment ambassadors;
 - a pilot with the Engineering Recruitment Office to invite select alumni to participate in a post-offer reception in Vancouver;
 - improved coordination of alumni contacts between offices; and
 - analysis of current student geographic demographics to predict future alumni regional trends.
- Engaged 30 alumni with the Alumni Assessor Program to review applicant personal profiles as part of the Faculty’s enhanced broad-based admissions process
- Partnered with the Engineering Society to launch Skule™ Alumni Outreach (SkuleAO), a student-run program to assist alumni who wish to support and enhance the experiences of current students
- Expanded engagement with current students — our future alumni — by creating a new Alumni Outreach Director position on the Engineering Society, initiating the inaugural Engineering Society Reunion of current and past officers of the Engineering Society and increasing participation in Gratitude, which encourages graduating students to give back to future students

2.9 Enhance governance processes, cyclical reviews and quality assurance processes.

- Completed the first internal review at the Decanal level of an extra-departmental unit, the Institute for Leadership Education in Engineering (ILead)
- Completed an internal review of the Lassonde Mineral Engineering Program (LMEP)

- Initiated a review of the Engineering Outreach Office and completed an internal review of the Engineering Communications Program
- Commissioned external reviews of Chemical Engineering & Applied Chemistry, Engineering Science and the University of Toronto Institute for Aerospace Studies
- Submitted interim reports to the Canadian Engineering Accreditation Board for engineering science, electrical engineering, computer engineering and the mineral engineering programs
- Delivered governance orientation sessions to relevant stakeholders
- Shared annual progress reports on department and institute external review recommendations at regularly scheduled chairs and directors meetings

2.10 Strengthen communications both internally and externally

- Enhanced the e-newsletter for faculty and staff with a new design and content strategy to share information more effectively across the Faculty, with the average open rate increasing by five percentage points
- Started a survey for staff and faculty to assess the volume of communications that students are receiving as part of a Faculty-wide initiative to enhance and create best practices for student communications
- Increased collaboration, knowledge-sharing and skills-building for the Faculty communicators who make up the Engineering Communications Network (ECN) through more frequent gatherings, professional development and ongoing use of the ECN Hub
- Grew the Engineering Engagement & Development Network— a cross-Faculty group for staff and faculty — to more than 80 members, helping them engage in and become more aware of activities and events happening across the Faculty and providing professional development-oriented workshops, webinars and discussion forums

2.11 Continue to acknowledge the accomplishments of our students, faculty and administrative staff

- Held the 8th Annual Celebrating Engineering Excellence Reception to honour recipients of staff, teaching and research awards (April 2015)
- Increased internal and external media coverage of student and faculty accomplishments through the U of T Engineering News, *The Engineering Newsletter* and the Faculty's websites
- Ensured that senior administrative staff were nominated for and participated in the University's New Manager Academy and Business Manager Leadership Program