

## 6. Outreach, Collaboration and Influence

U of T Engineering continues to build on our global reach through strategic institutional partnerships, student mobility, international student recruitment and other initiatives to enhance our institutional contributions and influence. We create formal partnerships for academic, research, and/or student exchange where we have existing collaborations and relationships, and in areas that are mutually beneficial.

Over the past few years, we have developed relationships with key institutions around the world, including Addis Ababa University, Peking University, Hong Kong University of Science and Technology, and ETH Zurich. In 2015-2016, we formalized two agreements with Shanghai Jiao Tong University (SJTU), a long-standing partner with our aerospace program. These agreements enable SJTU master's students to obtain a U of T Engineering MEng, and select students to participate in a joint placement PhD. Since 2013, our Faculty created three 3+1+1 programs with select institutions in Asia, one of which is in the process of being converted to a dual degree. These unique programs allow top third-year engineering students to apply to U of T Engineering to complete their fourth year here while gaining conditional acceptance into one of our MEng programs. To date, 12 students have participated. We also expanded our international capstone course with Peking University to Tsinghua University. Our students recognize the importance of global fluency and are participating in increasing numbers in summer research abroad and international Professional Experience Year (PEY) internships.

Locally, we engage more than 9,000 pre-university students through our outreach programs. Increasing awareness of the engineering profession and the role it plays in society is critical to our future success and starts with students as early as Grade 3. This awareness is accomplished through a number of programs targeted at both students and teachers in middle and high school. In May 2016, we hosted a one-day workshop — InnovateU — in partnership with Google Canada and Actua, that attracted more than 1,400 students and teachers to learn more about science, technology, engineering and math (STEM). We reached more than 7,000 high school students through our Da Vinci Engineering Enrichment Program (DEEP) Summer Academy, one-third of whom were women. We continue to develop programs and reach out to underrepresented communities, particularly women and Indigenous youth, an area we recognize needs additional effort. Steps taken this past year include the creation of a Dean's Advisory Committee on Indigenous Engineering Initiatives & Outreach as well as the hiring of a Director, Engineering Pathways and Indigenous Partnerships, to engage with Indigenous

communities with the goal of increasing the rate of participation and academic success of Indigenous students in Engineering.

Within U of T, our Faculty continues to enhance our inter-Faculty partnerships in research and education. In 2015, we signed an interdivisional teaching agreement with the Faculty of Arts & Science to formalize our relationship and to enable us to work together more effectively in the delivery of technical and math courses, and increase the availability of spots for Engineering students in non-technical electives. The Centre for Global Engineering (CGEN) works closely with the Rotman School of Management and the Dalla Lana School of Public Health on JCR1000Y, a project-based course that brings together students from different disciplines to work in teams to address a major global challenge. U of T Engineering also established a graduate collaborative program in Engineering Education in 2014 with the Ontario Institute for Studies in Education (OISE) that enables graduate students to join a community of scholars interested in research and learning at the intersection of education and engineering practice.

Among our many research centres and institutes, we work collaboratively with other Faculties and institutions to develop solutions to pressing challenges. This includes the Southern Ontario Centre for Atmospheric Aerosol Research (SOCAAR), an interdisciplinary centre for the study of air quality, with a focus on how aerosols impact human health and the environment. Principal Investigators come from a number of departments in Engineering, Arts & Science, as well as the Dalla Lana School of Public Health. The University of Toronto Transportation Research Institute (UTTRI) works with faculty in Arts & Science, the Martin Prosperity Institute, Munk School of Global Affairs and School of Public Policy & Governance to study and develop urban transportation systems and solutions. These, in addition to large-scale projects such as the Translational Biology and Engineering Program (TBEP) and Medicine by Design (MbD) mentioned in the research chapter, ensure that our Faculty continues to play an integral role in the University's research agenda.

Our rich network of more than 48,000 alumni is one of our most valuable resources. They are our strongest ambassadors, and their continued commitment to the Faculty enables us to create unparalleled opportunities for our students. Our alumni act as mentors through our formal programs as well as through The Entrepreneurship Hatchery. They are our industry partners in research collaborations and capstone design projects, and employers through our PEY program. Members of our Skule™ family also provide invaluable advice and connections on departmental advisory and industry boards, as well as on our Faculty Campaign Executive. They also help shape the future of our student body by assessing applications through our broad-based admissions system.

We now have Engineering Alumni Association chapters in Calgary, Silicon Valley, and Hong Kong. These regions are particularly active and assist us greatly in recruitment and outreach. We host more than 60 alumni events per year, including our BizSkule speaker series and networking receptions around the world. Our alumni in Asia are also dedicated champions of our Faculty and students. They have generously supported the Centre for Engineering Innovation & Entrepreneurship (CEIE) and continue to be actively involved throughout the region through philanthropy, career and social events. In addition to the Dean's annual visits to the area, we are pleased to have accompanied University of Toronto President Meric Gertler and Vice- President of University Advancement David Palmer to Singapore to connect with our influential alumni and facilitate discussions regarding the University's three strategic priorities and alumni participation on the University's International Advisory Council.

Since the launch of Boundless: The Campaign for the University of Toronto in 2011, we have raised \$180 million of our \$200 million goal, including \$29.3 million in 2015–2016. Our Skule™ community has rallied around these efforts, particularly the CEIE. Our new building is designed to foster an environment of multidisciplinary education and research, bringing together faculty, students, staff, alumni and industry partners as we shape the future of engineering.

## **OUTREACH, COLLABORATION AND INFLUENCE: ACADEMIC PLAN PROGRESS HIGHLIGHTS**

### **6.1 Better understand the breadth of the Faculty's current outreach, collaborative and influencing efforts, then efficiently manage, support, develop and communicate these activities.**

- Developed a corporate brochure that highlights our key research strengths and the benefits of partnering with U of T Engineering; the brochure can be customized to target specific audiences, or feature a specific department or research area.
- Conducted a readership survey for our Skulematters alumni magazine, following the completion of the issue on entrepreneurship and commercialization, to ensure we are meeting the needs and interests of our alumni; feedback gathered was used to enhance the content and layout in the fall 2015 Skulematters highlighting "Women in Engineering: A Tradition of Excellence."
- Distributed a marketing insert through Skulematters to more than 600 alumni in the Asia-Pacific region that demonstrates our many research, student and alumni connections in the regions, fostering stronger ties between Asia-Pacific alumni and U of T Engineering.

### **6.2 Continue building meaningful involvement and relations with Engineering alumni.**

- Held 84 networking and professional development events for alumni around the world in 2015–2016 alone. These events included: a Spring Reunion event for alumni who graduated between five and 15 years ago; the Engineering Society Heritage Awards Celebration; and four BizSkule events in Toronto, Calgary and California’s Silicon Valley.
- Grew our Alumni Mentorship Program in 2015–2016, with 161 mentors and 280 mentees taking part – increases of 33% and 16% respectively over the previous year.
- Created the Young Alumni Board, comprised of recent graduates who are recognized leaders in their fields and philanthropic supporters of the Faculty, to engage and involve younger alumni in fundraising and community-building initiatives.
- Rolled out the Graduway alumni network social media platform across three departments in 2015–2016, with two more expected to launch in 2017. Graduway enhances our ability to connect with our global community of alumni and improves engagement, including in mentorship and volunteer opportunities.

### **6.3 Strengthen relationships with other University of Toronto Faculties.**

- Launched the Master’s/PhD collaborative program in Engineering Education with the Ontario Institute for Studies in Education (OISE).
- Collaborated with the Faculties of Medicine, Pharmacy and Arts & Science and hospital partners, in Medicine by Design (MbD), an initiative that uses engineering design principles and quantitative biological modelling to advance discoveries in regenerative medicine.
- Established the Translational Biology and Engineering Program (TBEP) in collaboration with the Faculties of Medicine and Dentistry.
- Offered the Interdisciplinary Approach to Global Challenges courses, through Centre for Global Engineering, which brought together graduate students from U of T Engineering, the Dalla Lana School of Public Health, the Rotman School of Management and the Munk School of Global Affairs.
- Established the University of Toronto Transportation Research Institute (UTTRI), an initiative that brings U of T’s considerable depth and breadth of research to bear on urban transportation problems from the perspectives of engineering, humanities and science.

### **6.4 Further develop sustainable collaborations with industry partners, and expand established partnerships with affiliated hospitals and research institutes.**

- Fostered and celebrated our collaborative successes with our industrial and government partners through our Annual Reception for Engineering Industry Partners. November 2016 marked the fifth time has been held.
- Engaged with numerous industry clients such as Pratt & Whitney and Magellan Aerospace for summer/multidisciplinary capstone design projects through the University of Toronto Institute for Multidisciplinary Design & Innovation (UT-IMDI).
- Continued to offer mentorship and sponsorship opportunities for alumni in industry through The Entrepreneurship Hatchery.
- Published second external annual report – Innovation Lives Here – Year in Review 2015, in summer 2015 to share key achievements with industry partners, alumni and prospective donors.
- Established the NSERC Design Chair Multidisciplinary Capstone Project (MCP) Lead Committee, which includes 12 industry representatives and submitted its renewal proposal for 2017-2020.

## **6.5 Further develop connections with local communities, businesses and the City of Toronto.**

- Worked to improve social services with the Centre for Social Services Engineering, which applies industrial and systems engineering techniques — including mathematical analysis, big data and machine learning — to improve the delivery of goods and services to vulnerable populations in urban centres.
- Continued for a fifth year the Sky Garden, a roof-top garden on the Galbraith Building that in 2015 donated more than 225 kilograms of vegetables to local charitable organizations.
- Engaged and worked with local communities through the UTTRI, with several initiatives including a workshop on Travel Methods for the Greater Golden Horseshoe, the Intelligent Transportation Systems Research Day, and the Freight Day Symposium.
- City of Toronto tested U of T Engineering graduate Samah El-Tantawy's (CivE) smart traffic light system on 60 downtown Toronto intersections, reducing delays by as much as 40%.

## **6.6 Build upon high school outreach and continue to assess our pre-university activities with the goal of optimizing faculty and student involvement.**

- Inspired more than 9,000 youth through our pre-university outreach programs, including the in-school workshop program for students in Grades 3 to 8, March Break programs, Saturday workshops, and the Da Vinci Engineering Enrichment Program (DEEP), reaching students in Grades 3 through 12 and allowing participants to explore cutting-edge engineering applications such as sustainable energy, biomedical engineering and robotics.
- Conceived and launched the Girls' Leadership in Engineering Experience (GLEE), a weekend-long program for female students with offers of admission to U of T Engineering. GLEE inspires students to learn more about the contributions they can make as engineers and the unique opportunities our Faculty offers. In 2016, 91% of the 87 students participating in GLEE accepted our offers of admission, compared with 77% in 2013.
- Launched the DEEP Saturday Workshops, which allow participants to explore cutting-edge engineering applications, such as sustainable energy, biomedical engineering and robotics.
- Visited California science fairs to engage with top Grade 10 and 11 students and offer scholarships to DEEP Summer Academy.
- Hosted Innovate U, Canada's largest science, technology, engineering and math (STEM) event for children in Grades 3 to 8 on May 13, 2016. This one-day workshop was run in partnership with Google Canada and Actua and attracted more than 1,400 students and teachers from across the Greater Toronto Area.

## **6.7 Develop strategic relationships with desirable peer, national and international Engineering schools.**

- Established U of T Engineering as a leading partner in Brazil's Ciência sem Fronteiras (formerly Science Without Borders) program, welcoming 490 students from September 2012 through December 2015. The final year of the program was 2015–2016.
- Enabled our students to gain cross-cultural fluency and experiences that enhance their understanding of complex global challenges through international educational exchanges, research programs and professional placements.

- In 2015–2016, 89 students participated in outgoing exchanges to peer institutions such as the Massachusetts Institute of Technology, ETH-Zurich Swiss Federal Institute of Technology and National University of Singapore.
- 79 students gained invaluable international work experience by completing PEY internship placements outside Canada in 2015-2016.
- Further strengthened our relationship with Shanghai Jiao Tong University (SJTU), China through a memorandum of understanding to support aerospace research and education collaboration.
- Developed 3+1+1 programs with South China University of Technology, Shanghai University, and Tianjin University, that will allow select top students from these institutions to complete their fourth year of undergraduate studies at U of T Engineering, with conditional acceptance to our MEng program.
- Actively recruited top students from across Canada through events such as Graduate Research Days and a nationwide recruitment tour held in partnership with a consortium of the country's best engineering schools.
- Expanded the number of partners in our international capstone design course to include Tsinghua University along with existing partners Peking University (PKU), the National University of Singapore (NUS) and the University of California, Irvine.

#### **6.8 Increase influence in government and public policy decisions.**

- Engaged with the Office of the Vice-President, Research and Innovation (OVPRI) and the Ontario Council of University Research (OCUR) to successfully make the case to Ontario's Ministry of Research and Innovation to improve transparency in its review process for the Ontario Research Fund-Research Excellence (ORF-RE) program.
- Presented highlights of U of T Engineering sustainability research to NSERC staff in Ottawa in February 2015.
- Participated in a 2013 announcement by the Ontario Minister of Research and Innovation of a \$35-million grant from the Ontario government in support of U of T research infrastructure.
- Met with several ministers and Tri-Council leadership to discuss entrepreneurial advances and research infrastructure in the Faculty.

#### **6.9 Develop a culture of stewardship and gratitude to the alumni and donors who provide philanthropic support to the Faculty.**

- Publicly recognized several major donors through online news articles and print publications.
- Launched the Faculty's component of Boundless: The Campaign for the University of Toronto in September 2012 at an event attended by more than 600 members of the Engineering community.
- Recognized donors and acknowledged their generous gifts in support of the Faculty via the Annual Dean's Dinner
- Hosted a dynamic groundbreaking ceremony for the Centre for Engineering Innovation & Entrepreneurship (CEIE) that engaged donors and the broader U of T community.
- Celebrated and recognized alumni for their outstanding achievements via the Engineering Alumni Association Awards Dinner.

- Attracted \$29.3 million in philanthropic gifts in 2015–2016, bringing our fundraising for Boundless: The Campaign for the University of Toronto to \$180 million, or 90 per cent of our \$200 million goal.
- Launched our first Spring Reunion Giving campaign in 2016, including both online and direct mail giving options.

**6.10 Encourage the participation of administrative staff in professional associations related to their area of expertise, and in the mentoring programs offered by the University.**

- Established a Human Resources Office in summer 2013 to support Faculty objectives.
- Secured funding and related support from the Office of Student Life for a professional development day for all registrarial staff at U of T held in November 2012, with more than 300 staff attending from the three campuses.
- Established a series of workshops through the Organizational Development and Learning Centre (ODLC) for staff advisers and student life professionals; ODLC now has a number of courses to assist staff working closely with students.
- Explored opportunities for formal and informal initiatives to encourage staff development through regular meetings of departmental business officers and our new Human Resources office.
- Ensured that senior administrative staff were nominated for and participated in the University’s New Manager Academy and Business Manager Leadership Program.
- Over the past five years, supported the participation of 16 staff through the Rose Patten Mentorship Program, a formal and highly competitive program through the University of Toronto.