

# U of T Engineering by the Numbers 2016–2017



**144**

years since the Faculty was established in 1873

**7**

degrees offered, including 2 undergraduate and 5 graduate degrees

**25+**

multidisciplinary research centres

**\$210M+**

raised, surpassing our Boundless campaign goal of \$200M

## U of T Engineering Community

**5,441**

undergraduate students (ch.1)

**2,365**

graduate students (ch.2)

**261**

faculty (pg.9)

**326**

administrative and technical staff (pg.9)

**50,000+**

alumni worldwide (ch.7)

**100+**

countries our students and faculty call home (ch.1)

## Research & Innovation

**90**

chairs and professorships (ch.3)

**390+**

industrial research partners worldwide (ch.9)

**\$31.1M**

in Tri-Agency funding (ch.3)

**6**

NSERC CREATE grants (ch.3)

**110+**

spinoff companies since 1970 (appendix F)

**20**

new projects awarded through Dean's Strategic Fund (ch.11)

## Transdisciplinary and Experiential Education

**9**

undergraduate programs and 8 Engineering Science majors (ch.1)

**17**

undergraduate minors and certificates (ch.4)

**3**

cross-Faculty Collaborative Specializations for graduate students (ch.2)

**10+**

MEng emphases (ch.2)

**12,298**

applicants to undergraduate studies (ch.1)

**1,005**

undergraduates in first year (ch.1)

**40.1%**

women in first year of undergraduate studies (ch.1)

**93.2%**

mean entering average of incoming Ontario students (ch.1)

**160+**

partner universities offering study-abroad opportunities (ch.9)

**100+**

student-run engineering clubs and teams (appendix A)

**325+**

companies hired more than 730 undergraduate students through the Professional Experience Year (PEY) internship program (ch.4)

# Message from the Dean

It is my privilege to present our *2017 Annual Report of Performance Indicators*, which includes data spanning the last decade and highlights of initiatives we launched in 2016–2017. Through critical reflection and review over the past year, this data along with our achievements informed a comprehensive self-study of our Faculty, in preparation for our external review. This annual report will serve as a vital resource as we formalize our ambitious goals and begin to implement our 2017–2022 Academic Plan.

As engineers, our quest to innovate, create new technologies and address some of the world's most complex and pressing challenges is unyielding. Excellence is achieved through creativity and collaboration among people with diverse backgrounds and experiences. As the top-ranked engineering school in Canada and one of the world's best, we are leading the way.

Our vibrant U of T Engineering community includes students and faculty of the highest calibre from more than 100 countries – diversity that deepens the creative process and enriches our endeavours with a vast array of perspectives. We foster a thriving culture of engineering excellence that inspires and accelerates innovation. Students are drawn to our classrooms, laboratories and makerspaces by our outstanding undergraduate and graduate programs, exceptional multidisciplinary research, and rich opportunities for experiential learning and entrepreneurship.

Through strategic recruitment, outreach and our commitment to inclusivity, we have achieved the highest proportion of women among our undergraduate students and faculty members in our history, and more than one-third of our Canada Research Chairs are held by women. We are taking a leadership role in reducing the gender gap within our profession, driving Engineers Canada toward its '30 by 30' objective of 30% female representation among newly licensed engineers by 2030.

We also lead in educational innovation, developing pedagogies for active and experiential learning that are transforming our engineering programs. Our new Hart Teaching Innovation Professors and Technology Enhanced Active Learning (TEAL) Fellows are developing strategies that enhance the academic environment and prepare students for their careers.



One illustration of our commitment to engineering education and research excellence is the forthcoming Centre for Engineering Innovation & Entrepreneurship (CEIE). When it opens to our engineering community in spring 2018, the CEIE will be home to collaborative research institutes and dynamic experiential learning spaces, including TEAL rooms, design studios and fabrication facilities, that will unleash our students' creative and entrepreneurial spirit.

We continue to build on our strengths in transformational fields such as artificial intelligence, data analytics, robotics, health engineering, sustainability and water by making strategic investments and by nurturing brilliant scholars in these priority areas. In 2016, U of T Engineering established the U of T Havelaar Electric Vehicle Research Centre, the Institute for Water Innovation, and a new research partnership with industry and the federal government to advance autonomous navigation by unmanned aerial vehicles. In addition, research spinoff companies such as ModiFace and Deep Genomics are applying the latest in machine learning and augmented reality to critical applications, from computer image recognition to the treatment of genetic diseases.

Our collective achievements in the past 12 months reflect our unwavering pursuit of excellence in engineering research and education. The culture of innovation, diversity, creativity and service that defines our Faculty empowers the next generation of engineering leaders and innovators to strengthen communities, and transform our shared future for the better.

A handwritten signature in black ink that reads 'Cristina Amon'.

**Cristina Amon**, Dean

# Faculty Leadership, 2016–2017

**Dean**

Cristina Amon

**Vice-Dean, Graduate Studies**

Markus Bussmann

**Vice-Dean, Research**

David Sinton (Interim, to February 28)

Ramin Farnood (Interim)

**Vice-Dean, Undergraduate**

Thomas Coyle

**Associate Dean, Cross-Disciplinary Programs**

Bryan Karney

Jonathan Rose (Acting)

**Chair, First Year**

Micah Stickel

**Director, University of Toronto  
Institute for Aerospace Studies**

Christopher Damaren

**Director, Institute of Biomaterials  
& Biomedical Engineering**

Christopher Yip

**Chair, Department of Chemical Engineering  
& Applied Chemistry**

Grant Allen

**Chair, Department of Civil Engineering**

Brent Sleep

**Chair, The Edward S. Rogers Sr. Department of  
Electrical & Computer Engineering**

Farid Najm

**Chair, Division of Engineering Science**

Mark Kortschot (to December 31)

Deepa Kundur

**Chair, Department of Materials  
Science & Engineering**

Jun Nogami

**Chair, Department of Mechanical  
& Industrial Engineering**

Jean Zu

Chi-Guhn Lee (Interim)

**Assistant Dean, Administration**

Lisa Camilleri

**Chief Financial Officer**

Brian Coates

**Executive Director, Advancement**

Gillian Sneddon

**Executive Director, Communications**

Catherine Riddell

**Faculty Registrar**

Don MacMillan

# Table of Contents

## ■ Introduction | 2

- Selected Achievements Under the Academic Plan
- Comparison of U of T Engineering with Ontario and Canada
- Comparison of U of T Engineering with St. George Campus and University of Toronto
- U of T Engineering: A Decade of Achievement

## ■ Chapter 1: Undergraduate Studies | 15

- Admissions and First-Year Students
- Enrolment
- Need-Based Funding
- Degrees Awarded
- Student-to-Faculty Ratios
- Dean's Honour List
- Enriching the Undergraduate Experience
- Pre-University Engineering Outreach
- Selected Undergraduate Highlights

## ■ Chapter 2: Graduate Studies | 31

- Enrolment
- Recruitment and Admissions
- Funding
- Graduate Studies Completion
- Enriching the Graduate Student Experience
- Selected Graduate Student Highlights

## ■ Chapter 3: Research | 47

- Selected Research Highlights
- Research Funding and Partnerships

## ■ Chapter 4: Cross-Faculty Education and Experiential Learning | 63

- Undergraduate Engineering Minors and Certificates, Complementary Courses and Inter-Divisional Collaboration
- Undergraduate Design and Research
- Engineering Leadership
- Student Entrepreneurship
- Professional Experience
- Engineering Communication
- Student Clubs and Teams

## ■ Chapter 5: Awards and Honours | 71

- Measuring Excellence
- Selected Awards Received by Faculty Members and Alumni
- Selected Awards Received by Staff
- University of Toronto Engineering Faculty Awards
- Engineering Alumni Association Awards

## ■ Chapter 6: World Recognition by Rankings | 79

- Comprehensive University Rankings
- Rankings Based on Publications and Citations
- Summary of Ranking Results

## ■ Chapter 7: Advancement | 93

- Philanthropic Support
- Gift Highlights
- Initiatives and Projects
- Alumni Events and Engagement

## ■ Chapter 8: Communications | 99

- Selected Communication Projects
- Media Coverage
- Engineering News at U of T
- Online Activity

## ■ Chapter 9: International Initiatives | 107

- International Students and Exchanges
- Selected Educational and Research Partnerships

## ■ Chapter 10: Diversity | 111

- Diversity: Measures of Progress
- Diversity: Selected Highlights

## ■ Chapter 11: Financial and Physical Resources | 119

- Total Revenue and Central Costs
- Budget Overview
- Lab Innovation for Toronto and Dean's Infrastructure Improvement Fund
- Dean's Strategic Fund
- Infrastructure and Facilities
- Projects Completed and Projects Underway

## ■ Glossary | 129

## ■ Appendices | 133

- A: Student Clubs and Teams
- B: Outreach Programs
- C: Time to Completion for Graduate Students
- D: Research Chairs
- E: Research Funding by Academic Area
- F: Spinoff Companies
- G: Descriptions of Major Awards
- H: Academic Staff by Academic Area
- I: The Engineering Precinct

## ■ Data Sources | 159

# Selected Achievements Under the Academic Plan: 2011–2016

On October 6, 2011, the Faculty of Applied Science & Engineering approved our Academic Plan 2011–2016, which outlined our strategic goals in key areas: positioning; culture of excellence; educating future engineers; student experience; research foci; outreach, collaboration and influence; and resource allocation. We have made tremendous progress towards achieving, and in many cases surpassing, our ambitious goals.

The full Academic Plan is available at [uoft.me/engacademicplan](http://uoft.me/engacademicplan), and our *Final Report on Progress and Achievements* was published in November 2016, and is available at [uoft.me/AcademicPlanFinal](http://uoft.me/AcademicPlanFinal).

## Positioning

The past five years have been characterized by exceptional opportunities to enhance our reputation as Canada's top-ranked engineering school and one of the world's best among regional, national and international stakeholders.

### Highlights

- Proactively increased the visibility of the Faculty by publishing more than 1,100 stories on U of T Engineering News, and securing more than 28,000 media stories that include the University of Toronto and the key word “engineering” since 2014; 57% of those mentions were by international media outlets.
- Expanded the reach of the Faculty's social media channels: Facebook engagements grew 447% and Twitter engagements (i.e., interactions) grew by nearly 600% between 2015 and 2016; relaunched our Instagram channel in January 2016 to showcase our vibrant student life and thriving sense of community, and have increased our followers by roughly 250%.
- Refreshed the Faculty's website with an increased emphasis on streamlining design, refining content and promoting news.
- Increased readership of our quarterly alumni e-newsletter by 1,100 to more than 22,000 subscribers as of June 2016 and increased open rate to 37.3%, 15 percentage points higher than the industry benchmark in Higher Education.
- Garnered 14 prestigious communications awards and the Engineering Strategic Communications team was named the Not-for-Profit Communication Department of the Year at the world conference of the International Association of Business Communicators (IABC).

## Culture of Excellence

U of T Engineering established ambitious goals in areas of research, education, outreach and collaboration, as well as resource management. Our ability to meet — and in many cases, surpass — those goals has had an exponentially positive impact on our standing as a leader among the world's very best engineering schools.

### Highlights

- Earned an average of 25.4% of the major national and international awards won by engineering professors in Canada over the past five years, including the L'Oréal/UNESCO for Women in Science Award, Killam Prize in Engineering, NSERC Brockhouse Canada Prize and Engineers Canada Gold Medal Award.
- Earned 16 major education awards at university, national and international levels, including the 3M National Teaching Fellowship, Engineers Canada Medal for Distinction in Engineering Education, OCUFA Teaching Award and the U of T President's Teaching Award.

- Significantly increased the percentage of women professors in our ranks to 21.0% by 2016, adding 18 women professors, an increase of 35.5% over five years.
- Strengthened gender diversity among students: women comprised 30.0% of all undergraduates and 40.1% of entering first-year engineering students in fall 2016, up from 23.2% in fall 2011. Women graduate students increased to 26.1% compared to 24.9% in 2011.
- Increased the proportion of international graduate students to 33.7% in 2016, up from 19.3% in 2011, and the proportion of international undergraduate students to 27.0%, up from 19.1% at the start of the Academic Plan.
- Hosted the biannual Educational Technology Workshop “EdTech” to enable instructors to share best practices for innovative teaching and learning.
- Conducted external reviews of all eight of our academic units; reviewers spoke highly of the calibre of our programs and students, as well as the excellence and dedication of our faculty and staff.
- Recognized 45 staff and faculty through internal awards for excellence in research, teaching, leadership and dedication to improving the student experience; these awards are presented at the annual Celebrating Engineering Excellence event, established by Dean Amon and held each spring.

## Educating Future Engineers

U of T Engineering has built a global reputation for excellence that attracts bright students from around the world to our programs. Our curriculum, experiential learning opportunities and co-curricular programs demonstrate our commitment to developing future generations of makers, innovators and global engineering leaders.

### Highlights

- Expanded the broad-based admissions process for candidates applying to our undergraduate programs with videos and timed essays; this pilot project, the first of its kind among Canadian engineering schools, gives more comprehensive knowledge of each applicant.
- Expanded the number of undergraduate minors and certificates offered to 15 from 9 in 2011. In 2015–2016, more than half of all graduating undergraduate students completed either a minor or certificate.
- Developed the multidisciplinary capstone design projects course offered by the University of Toronto Institute for Multidisciplinary Design & Innovation; 350+ students have participated from across all undergraduate programs since its inception in 2012.
- Introduced two new Engineering Science majors: Biomedical Systems and Robotics Engineering.
- Launched the first-year course APS100 Orientation to Engineering, one of several initiatives that help students transition into the engineering academic environment.
- Expanded the number of first-year online courses to four and video captured lectures in most first-year classes, allowing students more choice in how they access education material.
- Introduced the inverted classroom model to several second-year courses, requiring students to watch lectures online prior to class and use classroom time to engage in experiential learning.
- Surpassed our goal of enrolling 2,000 graduate students by 2015 two years ahead of schedule, now at 2,365, and increased the proportion of graduate students in our overall student body to 32.9%, bringing us closer to our longer-term goal of 40% by 2030.
- Increased the total number of full-time equivalent professional master’s students to surpass the number of full-time equivalent MASc students (56%, goal was 50%).
- Grew the number of full-time equivalent MEng students by 54% between 2011–2012 and 2015–2016.
- Strengthened MEng offerings by launching 5 new emphases, bringing the total to 12 from 7 in 2011.
- Launched two new MEng programs: a Master of Engineering in Cities Engineering and Management (MEngCEM) and a MEng in Biomedical Engineering that focuses on medical device design.
- Developed four online courses for the MEng ELITE program.
- Created the Collaborative Program in Engineering Education (EngEd) in fall 2014 for master’s and doctoral students from Engineering and U of T’s Ontario Institute for Studies in Education (OISE).
- Increased the number of students in our PhD program by 19.6% over the past five years.
- Created a Technology Enhanced Active Learning (TEAL) classroom in 2014 to pilot new models of teaching courses.
- Increased the number of engineering students participating in the Professional Experience Year (PEY) internships to 790 in 2015–2016 with 79 international placements, from 581 in 2011–2012 with 34 international placements.
- Established the U of T Engineering International Scholar Award, an entrance scholarship for international students that covers the full cost of tuition (up to \$45,700) and is renewable for four years.

## Student Experience

U of T Engineering has developed programming to offer students unparalleled opportunities to develop competencies in leadership, communication, multidisciplinary collaboration, entrepreneurship and cross-cultural fluency through a range of innovative curricular and co-curricular programming.

### Highlights

- Increased the undergraduate retention rate from first-to-second year to a record 93.8% in 2014, up from 91.1% in 2011.
- Launched 34 startups through The Entrepreneurship Hatchery since it was created in 2012.
- Recognized students via the co-curricular record (CCR) for the competencies gained through their non-academic activities. In its pilot year (2013–2014), the CCR recognized 15 roles, and in 2015–2016, it recognized 215 roles.
- Established a cross-cultural capstone course with Peking University, recently expanded to Tsinghua University, where student teams in each institution partner together on an industry-sponsored design project; 70 students have participated to date.
- Developed partnerships with institutions around the world, including Addis Ababa University, Peking University, Hong Kong University of Science and Technology, and ETH Zurich.
- Formalized two collaborative programs with Shanghai Jiao Tong University (SJTU) in 2015–2016, 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.
- Developed 3+1+1 programs with South China University of Technology, Shanghai University and Tianjin University to enable select students from these institutions to complete their fourth year of undergraduate studies at U of T Engineering, with conditional acceptance to our MEng program.
- Increased the number of students participating in outgoing exchanges to peer institutions to 89 in 2016 from 61 in 2011.
- Established a flex-time PhD option in several departments that allows students who are employed full-time and have a master's degree in engineering to pursue a PhD; this specialty degree is a partnership between a student, an employer and a supervising professor.
- Launched the Engineering Instructional Innovation Program (EIIP) in 2013, which makes strategic investments that will lead to better learning and teaching pedagogies and improvements in the learning experience for our students.

## Research Foci

U of T Engineering's innovative research programs have contributed to our global ranking as the top engineering school in Canada and is a major factor in our ability to attract outstanding faculty and students. Our strategic focus on initiatives that nurture a culture of collaboration and cross-disciplinarity are key elements of our reputation and success.

### Highlights

- Created the following nine multidisciplinary research centres and institutes between 2011–2016:
  - Centre for Power and Information (2015)
  - Centre for Aerial Robotics Research and Education (2015)
  - Institute for Water Innovation (2015)
  - University of Toronto Transportation Research Institute (2014)
  - Toronto Institute of Advanced Manufacturing (2014)
  - Institute for Sustainable Energy (2013)
  - Centre for Research in Sustainable Aviation (2012)
  - Centre for Resilience of Critical Infrastructure (2011)
  - University of Toronto Institute for Multidisciplinary Design & Innovation (2011)
- Partnered with the Faculties of Arts & Science, Medicine, Pharmacy and U of T-affiliated hospitals to create Medicine by Design (MbD), a regenerative medicine initiative made possible by a \$114-million grant from the Canada First Research Excellence Fund, the largest research grant in U of T's history.
- Established the Translational Biology and Engineering Program (TBEP), led by Engineering faculty in collaboration with the Faculties of Medicine and Dentistry, and completed the \$10-million TBEP laboratory in MaRS, part of the Ted Rogers Centre for Heart Research.
- Reached goal of \$25 million per year in Tri-Agency funding in 2012–2013, three years earlier than originally targeted. Subsequently increased goal to \$32 million by 2015–2016. Faculty achieved a record \$31.8 million in 2014–2015.
- Increased the number of Canada Research Chairs by eight (to a total of 30), increased Industrial Research Chairs by six (to a total of 10) and increased Endowed Chairs and Limited Term Chairs by 13 (to a total of 40).
- Created EMHSeed in 2015, a seed-funding program supporting collaborative research projects that bring together co-principal investigators from U of T Engineering and either the Faculty of Medicine or an affiliated hospital.
- Established the Percy Edward Hart and Erwin Edward Hart Professorships, and the Hart Teaching Innovation Professorships from a \$20-million endowment from the Hart Trust; awarded 13 inaugural professorships.
- Collaborated on research with more than 300 industry partners, from large multinationals such as Apple, Intel and General Electric to local businesses such as the Greater Toronto Airports Authority and U of T spinoffs such as ModiFace.



## Outreach, Collaboration & Influence

Our outreach and collaborative initiatives and activities enable U of T Engineering to leverage our local, regional and global community of partners to attract top students, expand and strengthen the impact of our research, and build capacity.

### Highlights

- Created the annual Young Women in Engineering Symposium, now in its fourth year, which attracts top female high school science students from across the Greater Toronto Area.
- Created Girls' Leadership in Engineering Experience (GLEE) in 2012, a weekend-long program for female students with offers of admission.
- Strengthened ties with our alumni around the world by establishing Engineering Alumni Network chapters in San Francisco and Hong Kong.
- Hosted 316 networking and professional development events for alumni around the world, including 84 events in 2015–2016.
- Grew our Alumni Mentorship Program in 2015–2016, with 162 mentors and 241 mentees taking part, increases of 224% and 435%, respectively, since 2011–2012.
- Expanded engagement with current students — our future alumni — by creating a new Alumni Outreach Director position in the Engineering Society, initiating the inaugural Engineering Society Heritage Awards Celebration of current and past officers of the Engineering Society, and increasing participation in Gratitude, a fundraising initiative aimed at graduating students.
- Engaged with programs that support student mobility, including the MasterCard Foundation Scholars Program, International Foundation Scholars Program and Ciência sem Fronteiras (formerly Science Without Borders).
- Improved engagement of the Toronto chapter of the Engineering Alumni Network by encouraging active participation in strategic Faculty events such as Convocation Plaza, Spring Reunion and the U of T Arbor Awards.
- 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.
- Launched the CONNECT alumni network social media platform across three departments in 2015–2016, with a Faculty-wide rollout in spring 2017.
- Inspired more than 9,000 youth through our pre-university outreach programs, reaching students in Grades 3 through 12 and allowing participants to explore cutting-edge engineering applications such as sustainable energy, biomedical engineering and robotics.
- Hosted Innovate U, Canada's largest science, technology, engineering and math (STEM) event for children in Grades 3 to 8 in May 2016. This event was run in partnership with Google Canada and Actua and attracted more than 1,400 students and teachers from across the Greater Toronto Area.
- Engaged with more than 300 industry partners from across Canada and around the world, including multinationals such as Airbus, Apple and Manulife Financial, and Ontario companies such as St. Mary's Cement and Geosyntec Consultants.
- Created the positions of Director, Corporate, Government & International Partnerships and Director, Foundation and Corporate Partnerships, to identify areas where our partners' medium-to-long-term strategic priorities overlap with the expertise of our professors, facilitating a move from one-time, project-based collaborations to a more strategic approach that includes a suite of projects related to common areas.
- Partnered with U of T's Office of the Vice-President, Research & Innovation and the Ontario Council of University Research in 2015–2016 to successfully make the case to Ontario's Ministry of Research, Innovation and Science to improve transparency in its review process for the Ontario Research Fund – Research Excellence program.
- Worked with the Ontario Centres of Excellence (OCE) in 2013 to harmonize the applications process for OCE partnership grants and allied NSERC Collaborative Research and Development submissions.
- Actively contributed our expertise on NSERC and other government agency panels, as well as on CEAB accreditation review teams. The faculty members who participate not only strengthen these organizations, but also gain valuable insight into how we can enhance our own programs and internal systems to align with the best practices they observe.

## Resource Allocation

Strengthening our resources — personnel, space, infrastructure and budget — is critical to our ability to achieve our mission and Academic Plan goals. They support and enhance each of the strategic areas outlined in our plan: our culture of excellence, reputation, student experience, curriculum and experiential learning opportunities, research and innovation, and outreach, collaboration and influence. Since 2011, we:

### Highlights

- Began construction on the Centre for Engineering Innovation & Entrepreneurship (CEIE), which will enable a new standard of excellence in engineering education and research.
- Received the NSERC Design Chair in Multidisciplinary Design and developed a suite of industry-supported multidisciplinary senior design projects to unite design initiative across the Faculty and foster collaboration, design and innovation.
- Increased total Canada Foundation for Innovation (CFI) funding over the last five years to \$34.8 million.
- From 2011 to 2016 raised \$180 million of our \$200-million Boundless campaign goal.
- Provided resources through the Dean's Strategic Fund to add a total of 234 study spaces to engineering buildings in the past five years to enhance interactive learning and socialization for students.
- Invested over \$48-million in improvements to over 90 laboratory and high-impact facilities through the federal government's Post-Secondary Institutions Strategic Investment Fund (SIF) and the Dean's Infrastructure Improvement Fund (DIIF). This enabled us to bring our facilities in line with our position as the top-ranked engineering school in Canada.

## Comparison of U of T Engineering with Ontario and Canada, 2016–2017

The table below compares U of T Engineering metrics against those of engineering Faculties in Ontario and Canada for 2016–2017. Within Canada, we awarded 7.3% of all undergraduate engineering degrees, 10.4% of all engineering master’s degrees and 9.9% of all engineering PhD degrees this past year.

Our internationally renowned scholars have received the single largest proportion of Natural Sciences and Engineering Research Council (NSERC) engineering funding in 2016–2017, despite the fact that they make up only 6.2% of Canada’s tenured and tenure-stream engineering professors.

	U of T Engineering	Ontario	U of T % of Ontario	Canada	U of T % of Canada
<b>Undergraduate</b>					
Enrolment (FTE)	4,681	38,685	12.1%	83,124	5.6%
Degrees Awarded	1,048	6,693	15.7%	14,403	7.3%
% Women	26.2%	20.2%		19.4%	
<b>Master's (MEng, MASC and MHSc)</b>					
Enrolment (FTE)	1,169	5,912	19.8%	14,594	8.0%
Degrees Awarded	669	3,330	20.1%	6,453	10.4%
% Women	31.4%	26.8%		25.4%	
<b>Doctoral (PhD)</b>					
Enrolment (FTE)	852	3,455	24.7%	9,284	9.2%
Degrees Awarded	150	651	23.0%	1,511	9.9%
% Women	25.3%	23.3%		23.8%	
<b>Faculty</b>					
Tenured and Tenure-Stream	231	1,613	14.3%	3,733	6.2%
<b>Major Awards</b>					
Major Awards Received	19	40	47.5%	78	24.4%
<b>Research Funding</b>					
NSERC Funding for Engineering	\$30.6M	\$129.7M	23.6%	\$307.6M	9.9%

**Note:** Unlike data contained in the rest of this report, enrolment (Full-time Equivalent, or FTE) and degrees awarded are based on the 2016 calendar year and come from Engineers Canada. Faculty data (tenured and tenure-stream) are based on November 2016 counts by Engineers Canada. Major awards are based on the 2016 calendar year and NSERC research funding is based on the 2016–2017 grant year (April to March).

## Comparison of U of T Engineering with St. George Campus and University of Toronto, 2016–2017

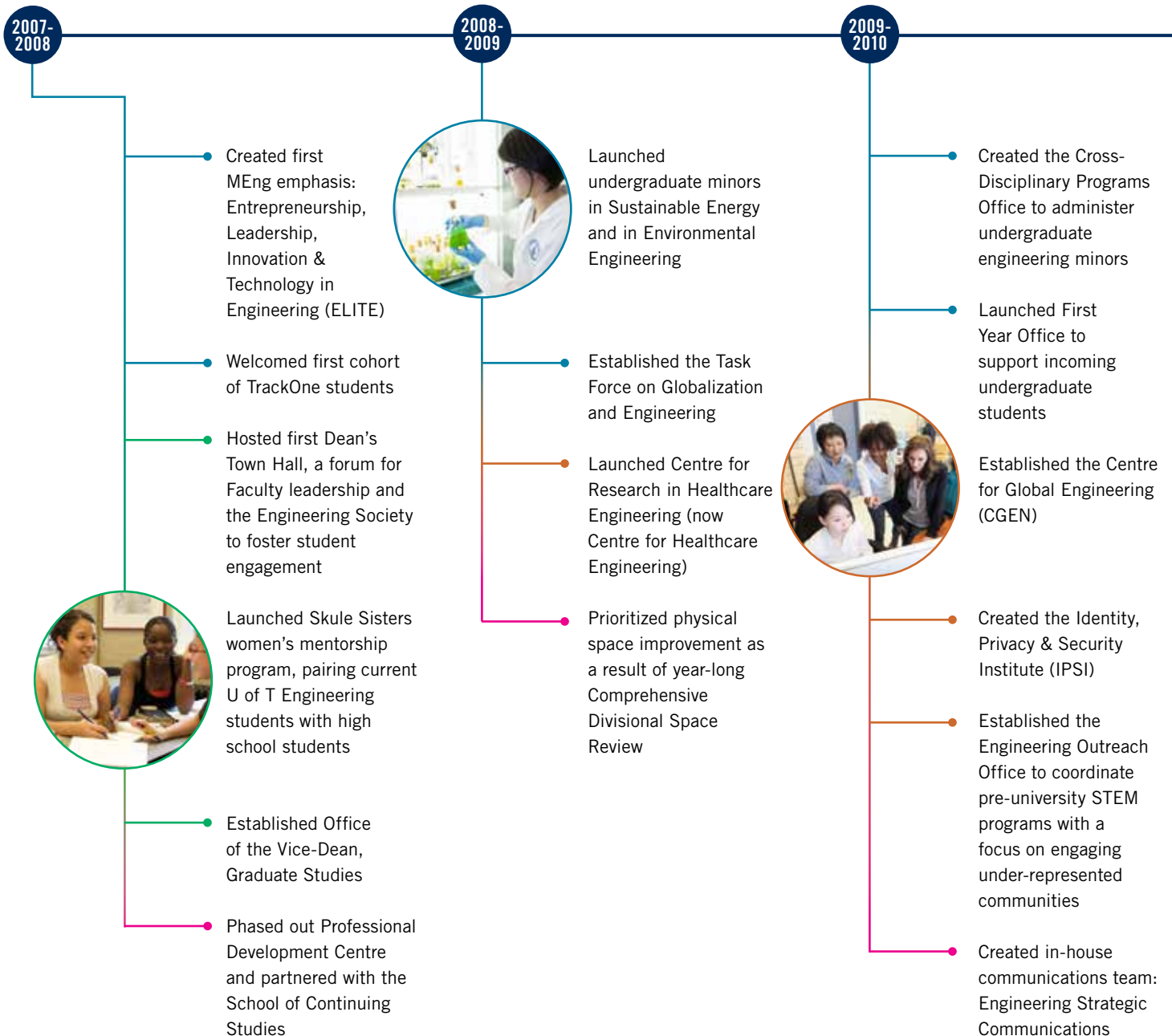
The following chart compares U of T Engineering with the University of Toronto based on key metrics for 2016–2017. Since our activities are concentrated on the St. George campus, we also present our relative metrics where available.

	U of T Engineering	St. George Campus	Engineering % of Campus	University of Toronto	Engineering % of U of T
<b>Student Enrolment</b>					
Undergraduate	5,441	38,256	14.2%	65,185	8.3%
Professional Master's (MEng and MHSc)	880	7,837	11.2%	8,342	10.5%
Research Master's (MASc)	608	2,919	20.8%	3,045	20.0%
Doctoral (PhD)	877	5,907	14.8%	6,217	14.1%
All Students	7,806	54,919	14.2%	82,789	9.4%
<b>Degrees Awarded</b>					
Undergraduate	1,123	7,715	14.6%	12,320	9.1%
Professional Master's (MEng and MHSc)	508	3,600	14.1%	3,895	13.0%
Research Master's (MASc)	200	1,263	15.8%	1,305	15.3%
Doctoral (PhD)	150	818	18.3%	879	17.1%
Total Degrees	1,981	13,396	14.8%	18,399	10.8%
<b>Faculty and Staff</b>					
Professoriate	261			2,965	8.8%
Administrative and Technical Staff	326			6,808	4.8%
<b>Research Funding</b>					
Sponsored Research Funding	\$74.2M			\$400.3M	18.5%
Industry Research Funding	\$7.6M			\$18.8M	40.2%
<b>Space</b>					
Space (NASMs)	64,471	634,209	10.2%	835,159	7.7%
<b>Revenue</b>					
University-wide Costs	\$65.6M			\$527.0M	12.4%
Total Operating Revenue	\$210.9M			\$1,958.6M	10.8%

**Note:** Student enrolment is shown as of November 1. Degrees awarded are based on the 2016–2017 academic year. Professoriate includes tenured, tenure-stream and teaching-stream faculty members. Administrative and technical staff include full- and part-time staff. Research funding is based on the 2015–2016 grant year (April to March). Space is measured in Net Assignable Square Metres (NASMs). Revenue is based on the 2016–2017 U of T fiscal year (May to April).

# U of T Engineering: A Decade of Achievement

The following timeline features select highlights of our Faculty's achievements over the past 10 years. For more information, please see the Annual Report for each academic year at [uoft.me/EngAnnualReports](http://uoft.me/EngAnnualReports).





Launched BioZone, a centre of applied bioscience and bioengineering

Launched the Centre for Resilience of Critical Infrastructure (CRCI)



First cohort of students completed multidisciplinary capstone projects with industry clients

Formed strategic partnerships with five Canadian universities to promote engineering graduate studies across the country

Launched The Entrepreneurship Hatchery

Established the U of T Institute for Multidisciplinary Design & Innovation (UT-IMDI)

2010-2011

Launched a minor in Engineering Business

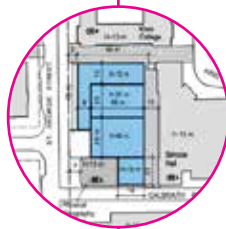
Established the Institute for Leadership Education in Engineering (ILead)

Launched the Institute for Robotics & Mechatronics (IRM)

Earned the Canadian Green Building Award for the Goldcorp Mining Innovation Suite in the Lassonde Mining Building

Created the Dean's Strategic Fund to provide seeding funding for strategic Faculty initiatives

2011-2012



U of T allocated Site 10 location for the new Centre for Engineering Innovation & Entrepreneurship (CEIE)

Implemented new budget allocation model

Developed and hosted the first educational technology (EdTech) conference for U of T community

Hosted inaugural Girls' Leadership in Engineering Experience (GLEE) event for top female applicants

2012-2013

Created the Centre for Research in Sustainable Aviation (CRSA)

Held first Faculty-wide industry partners reception

Set \$200M fundraising goal as part of U of T's Boundless campaign

Launched the Engineering Instructional Innovation Program (EIIP)

Opened new space flight laboratory for microsatellite research at UTIAS

2013-2014

Institute for Sustainable Energy (ISE) expanded to a cross-Faculty research unit

Completed construction of new floor in the Wallberg Building to house BioZone



- Educating Future Engineers & Student Experience
- Research Foci
- Outreach, Collaboration & Influence
- Resource Allocation



# U of T Engineering: Then & Now

	THEN (2007-08)	NOW (2016-17)
Applications to undergraduate programs	6,829	12,298
Entering average of first-year students	86.7%	93.2%
Enrolment of undergraduate students	4,646	5,441
Proportion of students who move from first to second year (retention rate)	84.1%	93.8%
Students on PEY internship	458	734
Undergraduate minors and certificates offered	1	15
Undergraduate degrees awarded	879	1,123
Proportion of undergraduates graduating with an engineering minor or certificate	6%	55%
Applications to graduate programs	2,510	4,678
Enrolment of MEng and MHSc students / MAsC and PhD students	306 / 1,105	880 / 1,485
PhD degrees awarded	84	150
MEng emphases offered	1	12
Ratio of undergraduate to graduate students	4:1	3:1
Tenure- and teaching-stream faculty	226	261
Research centres and institutes	12	26
Research chairs held by faculty	57	90
Engineering citations (AAU, indexed by Thomson Reuters)	4,149 (2003-07)	27,710 (2011-15)
Number of NSERC Collaborative Research and Training Experience (CREATE) grants held	3	6
Total research funding attracted	\$54.0M	\$74.6M
Proportion of international undergraduate students	11.3%	28.0%
Proportion of women in first-year engineering class	21.5%	40.1%
Proportion of international graduate students	17.4%	33.7%
Proportion of women in graduate programs	24.9%	26.1%
Proportion of women faculty	11.9%	21.1%
Number of STEM-outreach programs offered to pre-university youth	10	19
Number of alumni mentors / student mentees	89 / 145	142 / 241
Faculty footprint (NASMs) across the St. George campus	62,333	71,724 (incl. CEIE)
Total operating budget	\$80.9M	\$144.4M
Total revenue	\$125.2M	\$222.8M
Philanthropic support generated	\$2.5M	\$22M

● Educating Future Engineers & Student Experience

● Outreach, Collaboration & Influence

● Research Foci

● Resource Allocation