

## 7. Resource Allocation

Strengthening our resources — personnel, space, budget and infrastructure – is critical to our ability to achieve our mission and Academic Plan goals. They underpin 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.

Total annual revenues have increased to \$210.0 million over the past five years, from \$159.1 million in 2011–2012, while total costs have also risen. Our net revenue has increased by 7.8 per cent to \$116.1 million year over year, with a compound annual growth rate of 7.6 per cent over the past ten years. These strategic increases in revenue, coupled with responsible fiscal management, have enabled us to invest in excellence in research, education, and student experience. The implementation of our Faculty budget model has been tremendously successful and allows departments and institutes to make strategic financial decisions while advancing their academic priorities. As a Faculty, we have strengthened our position, infrastructure capacity, and increase our unencumbered operating contingency reserves.

In 2011, we launched the Dean’s Strategic Fund to provide start-up funding for projects that advance our Academic Plan goals. Over the course of the past five years, we have committed more than \$24 million to projects that improve the student experience and advance multidisciplinary research. Key criteria for funding are the commitment of multi-departmental collaborators and broad impact. Examples of funded projects include the expansion of The Entrepreneurship Hatchery to include an incubator for graduate-level, research-driven start-ups; the expansion of the MIE machine shop to students from all departments; and initial funding for the Institute for Sustainable Energy and the Toronto Institute for Advanced Manufacturing, both of which bring together faculty from multiple departments and across the university. As part of the Dean’s Strategic Fund, we also created the Engineering Instructional Innovation Program (EIIP) to support the development of novel pedagogies. Over the past three years, the EIIP has funded projects to re-engineer mathematics education, develop effective teamwork skills in technical courses using team-based learning, create parallel classrooms for MEng education in mechanical and aerospace engineering, and enhance curriculum delivery at the IBBME undergraduate teaching lab.

The Centre for Engineering Innovation & Entrepreneurship (CEIE) is designed to further enrich student experiential learning and heighten opportunities for cross-disciplinary

research, and will launch the beginning of a new era in U of T Engineering. Students will benefit from state-of-the-art Technology Enhanced Active Learning (TEAL) rooms, design-meet rooms, and a new light fabrication facility. The CEIE will also free up space in our existing Engineering buildings as we transition ownership of some of the classrooms in the new building to Academic and Campus Events (ACE). Some of these spaces will then be retrofitted to expand the number of research labs and create multi-purpose teaching labs that can be used for courses across the Faculty.

Recent major research infrastructure projects include the Translational Biology and Engineering Program Lab which completely renovated the 14th floor of the MaRS2 tower to include offices, meeting facilities and an advanced research lab. The Faculty created additional space on top of the Wallberg Building for BioZone, which was completed in three phases. The Ontario Centre for the Characterization of Advanced Materials (OCCAM) was completed in 2016 and made possible by strategic investments from CFI, MRI and Hitachi High-Technologies Canada.

We have made significant progress over the past five years in completing major upgrades and renovations to research, teaching and student space but there is still much work to be done to bring our facilities in line with our reputation as the premier engineering school in Canada. In July 2016, we received confirmation that the federal government's Post-Secondary Institutions Strategic Investment Fund (SIF) had accepted our proposal. Through funding from the federal government, Faculty and departments, we will invest \$31.6 million to renovate 89 laboratory facilities across our Engineering buildings. This will benefit more than 330 U of T Engineering researchers, staff and graduate students. Renovations must be complete by April 2018. In parallel to the SIF, we launched the Dean's Infrastructure Improvement Fund (DIIF) to fund large-scale infrastructure improvements within the Faculty, in partnership with departments and institutes. Eleven projects were approved, totalling more than \$17 million in improvements to teaching and lab spaces that will enhance the student experience.

Philanthropic fundraising is critical to ensuring we can advance both our academic and capital priorities. As mentioned in the Outreach, Collaboration, and Influence chapter, we have raised \$180 million of our \$200 million Boundless campaign goal. We have set a number of goals for principal, major, planned, and annual and leadership giving, and have attracted strong support for research, education and entrepreneurship across diverse disciplines. We will continue to strengthen our relationships with alumni and industry to further our goals in this area.

## RESOURCE ALLOCATION: ACADEMIC PLAN PROGRESS HIGHLIGHTS

### **7.1 Maximize quality academic time and effectiveness by increasing engagement in high value activities that support students' academic experience, contribute to knowledge creation, and advance engineering research frontiers.**

- Made progress towards our goal of 40% graduate students, now at 32.9% compared to 27.3% in 2011-2012.
- Created senior-level administrative support positions to further the mandates of BioZone, the University of Toronto Institute for Multidisciplinary Design & Innovation (UT-IMDI), and the Institute for Water Innovation which has a new focus on sustainable water management for water resource industries; added two administrative directors to further the mandates of BioZone and the Institute for Water Innovation, and one administrator to support the Institute for Robotics and Mechatronics and the Toronto Institute of Advanced Manufacturing.
- Reviewed with our academic units the local workload policies in conjunction with the University's Workload Policy and Procedures for Faculty and Librarians.

### **7.2 Place emphasis on Engineering's strategic research areas when considering faculty hires.**

- Conducted two Faculty-wide multidisciplinary academic searches targeted at interdisciplinary, diversity, research and teaching excellence resulting in 7 outstanding female hires with budgetary cross-appointments in two academic units each.
- Created stronger ties among department and increased multidisciplinary synergies by championing the highest academic standards in these faculty appointments.
- Hired NSERC Design Chair in Multidisciplinary Design and commenced development of a suite of industry-supported multidisciplinary senior design projects to unite design initiative across the Faculty and foster collaboration, design and innovation.

### **7.3 Provide a supportive environment for faculty members through mechanisms such as start-up funding, teaching skills workshops, and assistance via Associate Chairs, Research to create successful research proposals.**

- Held lunchtime 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.
- Continued to share best practices through the Research Committee to foster growth of Tri-Council sponsored research, which in turn affects the Faculty's Canada Research Chair (CRC) allocation.
- 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.

- Established a peer review or mentorship program in each department to support and guide faculty members in the development of their NSERC Discovery Grants (DGs), Discovery Accelerator Supplements (DAS), and Research Tools and Instruments (RTI) grant applications.

**7.4 Improve our chances of being awarded funding for capital projects by pre-planning for various opportunities consistent with our goals and suitable for external funding sources such as CFI, Ontario Ministry of Training, Colleges and Universities (MTCU) and other capital grants. Increase the quality and quantity of space particularly through fundraising for new and revitalized buildings.**

- Renovated a number of existing facilities and created new ones through strategic investments. Examples include the Translational Biology & Engineering Program (TBEP) Lab on the 14th floor of the MaRS Discovery District West Tower and BioZone on the third and fourth floors of the Wallberg Building. In these facilities, shared resources bring researchers together for interdisciplinary research.
- Increased total Canada Foundation for Innovation (CFI) funding over the last five years to \$34.8 million, compared with \$27.8 million in the five years leading up to 2010.
- Continued advocacy to governments for infrastructure support. For example, in the 2016 provincial budget, \$15 million was allocated to support the construction of the Centre for Engineering Entrepreneurship & Innovation (CEIE), which speaks to the strategic alignment of our goals with those of those of provincial policy-makers.

**7.5 Enhance teaching and design facilities, upgrade undergraduate laboratory space, and make flexible space available for extra-curricular activities.**

- Committed more than \$5.5 million through the Dean's Strategic Fund and Dean's Infrastructure Improvement Fund to support additional student laboratory upgrades.
- Consolidated student club space at 256 McCaul Street and 701 Spadina, including all music clubs, establishing a new multi-purpose room for events and rehearsals.
- Supported new initiatives to upgrade facilities and equipment through the Dean's Strategic Fund.
- Continued to evaluate the renovated Sandford Fleming TEAL room to aid in the final design of the TEAL spaces in the CEIE.
- Expanded the IBBME Teaching and Design Studio laboratories.
- Designed innovative teaching and design spaces in the CEIE.
- Initiated a Faculty-wide review of makerspaces to inventory and align resources available to students and develop a plan to expand access.

**7.6 Provide reliable, accessible, effective computing services; create study spaces within and outside computer laboratories, library and classrooms so as to enhance interactive learning and socialization where today's student 'lives'.**

- Initiated renovation in the Lassonde Mining Building for a student study area and conferencing centre.

- Added new study spaces to Bahen Centre and Wallberg Building inventory of hallway seating to enhance interactive learning and socialization.
- Approved funding for several Dean's Strategic Fund proposals to improve design, club, and meeting spaces throughout the Faculty.

**7.7 Encourage timely degree completion among doctoral stream students; increase research funding and graduate fellowships to support graduate students.**

- Held time to graduation to an average of 5.3 years for PhD students (compared to 5.5 for UofT overall) and 2.0 years for MSc students.
- Increased total graduate funding \$44.8 million in 2014–2015, up from \$38.2 million in 2011–2012.

**7.8 Establish a strong Case for Support that addresses the Faculty's resource requirements and aligns the Faculty's critical need for improved space in the context of addressing educational and research priorities.**

- Designated nearly half of all funds raised in 2014–2015 to research, student experience and programs, and student scholarships and awards.
- Raised close to \$80 million to date in support of the CEIE building, the cornerstone of our Engineering campaign.
- Continued construction of the CEIE and established four implementation groups to plan for the CEIE's new spaces and consult on key design decisions. These groups were composed of professors, students and staff from all departments, divisions and institutes and addressed four key aspects of the building: rapid prototyping and fabrication facilities, TEAL and design/meet rooms, research centres and student club space.

**7.9 Increase long-term philanthropic support by strengthening the culture of advancement within the Faculty.**

- Increased outreach to alumni by creating formal Engineering Alumni Association chapters in Calgary, Silicon Valley and Hong Kong.
- Greatly improved engagement of the Toronto chapter of the Engineering Alumni Association by encouraging active participation in strategic Faculty events such as Convocation Plaza, Spring Reunion and the U of T Arbor Awards.
- Established the Young Alumni Board, composed 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.
- 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.