



WHERE INNOVATION THRIVES

MESSAGE FROM THE DEAN



This has been yet another remarkable year. The 2012 Academic Ranking of World Universities named U of T Engineering the best engineering school in Canada for the sixth consecutive time, and we leapt forward eight places in the world ranking to 13th. We owe our accomplishments to our exceptional students, dedicated educators, innovative researchers, extraordinary alumni and passionate supporters.

In September 2012, we launched our \$200-million component of Boundless: The Campaign for the University of Toronto. One of the core goals of this Campaign is the construction of a new building that will help us stay at the top of our field: the Centre for Engineering Innovation & Entrepreneurship. This Centre will provide an environment that nurtures innovation and creativity while preparing students to lead on a global level. Thanks to strong support from our alumni and friends, we are well on our way to breaking ground for this important new space in 2016.

Our faculty garnered many major grants and awards, while making headlines with their innovative work. We also made significant strides to strengthen our ties with industry and to establish new partnerships.

To enhance the experience of our students, we further enriched student-learning opportunities in many ways, including the introduction of a multidisciplinary capstone design course and The Entrepreneurship Hatchery. We also enhanced our Master of Engineering offerings for graduate students by introducing a program in Cities Engineering & Management and a certificate in Advanced Water Technologies & Process Design.

All of these endeavours take us further toward our goals of developing global leaders, fostering entrepreneurship and addressing pressing issues in areas such as sustainability, energy and health. Thank you for your belief in the boundless future of the engineering profession, and in U of T Engineering's ability to meet the world's changing needs.

A handwritten signature in blue ink that reads "Cristina Amon". The signature is fluid and cursive, with the first name "Cristina" and last name "Amon" clearly distinguishable.

Cristina Amon
Dean

U OF T ENGINEERING ACADEMIC LEADERSHIP, 2012–2013

Dean

Cristina Amon

Vice-Dean, Graduate Studies

Chris Damaren

Vice-Dean, Research

Edward (Ted) H. Sargent

Vice-Dean, Undergraduate

Susan McCahan

Associate Dean, Cross-Disciplinary Programs

Bryan Karney

Chair, First Year

Micah Stickel

Chair, Division of Engineering Science

Mark Kortschot

Chair, Department of Chemical Engineering & Applied Chemistry

Grant Allen

Chair, Department of Civil Engineering

Brenda McCabe

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

Farid Najm

Chair, Department of Materials Science & Engineering

Jun Nogami

Chair, Department of Mechanical & Industrial Engineering

Jean Zu

Director, Institute of Biomaterials & Biomedical Engineering

J. Paul Santerre

Director, University of Toronto Institute for Aerospace Studies

David Zingg

A NEW HOME FOR INNOVATION AND ENTREPRENEURSHIP

The Centre for Engineering Innovation & Entrepreneurship is a much-needed response to two sweeping changes taking place at U of T Engineering: the move toward hands-on, collaborative learning and the expansion of engineering into many different disciplines such as health care, business systems and information technology.

Targeted to open in 2016, the Centre will provide dynamic, flexible environments that break down physical barriers between people, foster collaboration, encourage active learning and accelerate innovation. In addition to state-of-the-art instructional spaces, the Centre will house multidisciplinary research clusters comprised of some of the Faculty's most innovative research centres and institutes. Dedicated space for industry partners, alumni and student clubs will enable productive interaction across the entire U of T Engineering community.

Teams that will find a new home within the Centre include:


- The Centre for Global Engineering;
- The Entrepreneurship Hatchery;
- The Institute for Leadership Education in Engineering;
- The Institute for Robotics & Mechatronics; and,
- The Institute for Sustainable Energy

Located next to Convocation Hall and facing St. George Street, the Centre for Engineering Innovation & Entrepreneurship is destined to become a campus landmark. The Toronto-based firm Montgomery Sisam Architects (MSA) is partnering with U.K.-based sustainable design specialists Feilden Clegg Bradley Studios to create an innovative, energy-efficient building.

This ambitious project will ensure that U of T Engineering continues to attract and empower the finest faculty, staff and students by providing an environment that fosters creativity and inspires 21st-century learning and innovation.

"GIVEN CHANGES IN TECHNOLOGY AND ITS IMPACT ON OUR LIVES, ENGINEERING WILL HAVE A HIGHER PROFILE AND MORE IMPORTANCE IN THE WORLD THAN WHEN I WAS A STUDENT. IT'S IMPORTANT FOR THE FACULTY TO PLAY A PART IN THIS NEW ERA FOR ENGINEERING."

George Myhal
Senior Managing Partner, Brookfield Asset Management
Chair, U of T Engineering Boundless Campaign Executive Committee
Centre for Engineering Innovation & Entrepreneurship Benefactor



Future home of the Centre for Engineering Innovation & Entrepreneurship



Three enterprising undergraduates leveraged their tech savvy to launch an innovative web services aggregator called Chime. From left, Fahd Ananta, Guru Mahendran and Thariq Shihpar.

UNDERGRADUATE STUDIES: INSPIRING INNOVATION BOTH INSIDE AND OUTSIDE THE CLASSROOM

U of T Engineering students gain much more than world-class educations. They are immersed in a culture of innovation, provided with opportunities to develop their entrepreneurship skills and challenged to bring their ideas to life.

In January 2013, two Engineering Science undergraduates, Guru Mahendran and Thariq Shihpar, and their Computer Science colleague Fahd Ananta, launched a web services aggregator called Chime. It compiles emails, Facebook notifications, Twitter posts and more into a stream of real-time updates.


Chime was met with a great deal of excitement, quickly gaining almost 30,000 users. The inbound marketing software company HubSpot took notice and acquired Chime in March, calling it an “innovative company that could help them continue to transform the marketing landscape.” Upon graduation, the three founders headed

to Hubspot’s offices in Cambridge, Massachusetts to further develop their product. Guru and Thariq credit their success to the insights and confidence they developed during their fourth-year entrepreneurship course.

With the launch of The Entrepreneurship Hatchery’s ‘Idea Ignition’ event this year, enterprising undergraduates like the Chime founders can get on-campus support for turning their great ideas into commercial products and services. Thanks to the generosity of donors, The Hatchery is already supporting several student projects by providing startup funds, facilities and personalized mentorship from experienced entrepreneurs. “If it had been around when we were in second or third year, we would have definitely made use of it,” says Thariq. “It’s going to be a great resource for current undergrads.”

9,326

Undergraduate applications received in 2012 for 1,150 places, the highest number to date.

 **91.3%**
Average of incoming Ontario Secondary School students in 2012, our highest entrance average on record.

MORE CHOICE THAN EVER TO TAILOR UNDERGRADUATE STUDIES:

10 FIRST-YEAR PROGRAMS

8 MAJORS FOR ENGINEERING SCIENCE STUDENTS

716

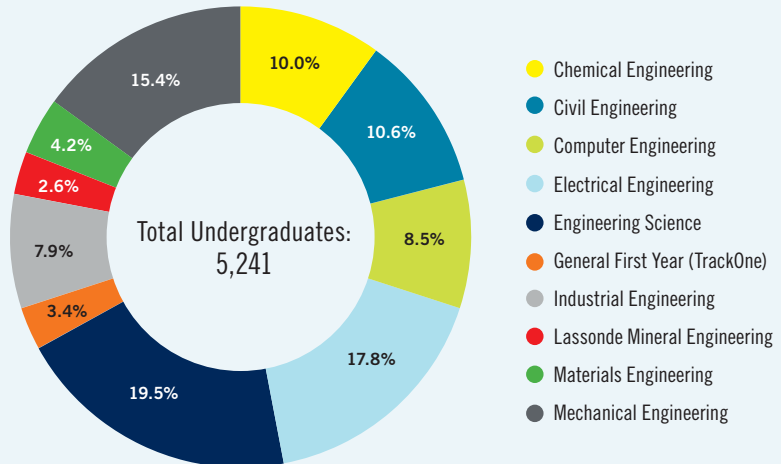
STUDENTS ENROLLED IN OUR CROSS-DISCIPLINARY MINORS including Engineering Business, Bioengineering and Sustainable Energy.



1 IN 4
FIRST-YEAR STUDENTS ARE WOMEN

[THE HIGHEST PROPORTION OF FEMALE UNDERGRADUATES IN THE LAST DECADE.]

UNDERGRADUATES BY PROGRAM OF STUDY, 2012–2013



\$7.6M

in need-based financial support was distributed to undergraduates in 2012–2013.

8 IN EVERY 100

CANADIAN ENGINEERING GRADUATES WERE FROM U OF T ENGINEERING IN 2012

IN 2012–2013, **241 EMPLOYERS** WORLDWIDE HIRED **631 OF OUR STUDENTS** THROUGH THE PROFESSIONAL EXPERIENCE YEAR (PEY) PROGRAM, REPRESENTING 58 PER CENT OF ELIGIBLE UNDERGRADUATES. THIS IS NEARLY TWICE THE NUMBER THAT PARTICIPATED IN PEY A DECADE AGO.

1 IN 7 APPLICANTS BECAME A U OF T ENGINEERING STUDENT 2012–2013



631

students earned a total of

\$35 MILLION

in salaries through the Professional Experience Year program in 2012–2013.

GRADUATE STUDIES: A LITTLE HOUSE WITH HUGE GREEN POTENTIAL

Space heating is the largest contributor to residential energy consumption in Canada, as well as many other countries around the world with similar climates. Civil Engineering PhD candidate Ekaterina Tzekova is part of a research team whose innovative solution could reduce the impact of space heating by 80 per cent.

Most traditional homes must be heated throughout, even in areas that are rarely used. Ekaterina is working with U of T Engineering Professor Kim Pressnail and Ryerson University Architectural Science Professor Russell Richman on a nested thermal envelope



Civil Engineering PhD candidate Ekaterina Tzekova and Professor Kim Pressnail stand with Ryerson University's Professor Russell Richman (far left) in front of the Toronto home that is being retrofitted with their nested thermal envelope design.

design that concentrates heat into frequently occupied zones, resulting in dramatic energy savings.

The design can be applied to virtually any type of new or existing structure, as evidenced by the team's prototype: an 1879 Victorian house on U of T's St. George campus. During the winter, a small unit cycles heat from the perimeter zone into main living areas. The home is 'zoned' so that only certain areas are heated as needed.

Ekaterina will spend the winter testing the design as the home's first resident since the installation of the nested thermal envelope. Visiting professors will inhabit the home over the next five years, allowing the research team to continue monitoring behaviour patterns to find new ways to optimize efficiency while maintaining a comfortable environment. The team will then construct a new custom-built home with a heating system that is informed by their findings.

1,933

graduate students in 2012–2013, just 3 per cent shy of our 2,000-student goal by 2015.

590

graduate degrees awarded in 2012–2013, the highest number to date.

185

ELITE (ENTREPRENEURSHIP, LEADERSHIP, INNOVATION & TECHNOLOGY IN ENGINEERING) CERTIFICATES AWARDED TO MASTER OF ENGINEERING STUDENTS SINCE 2008–2009.

1 IN 4

GRADUATE STUDENTS ARE WOMEN



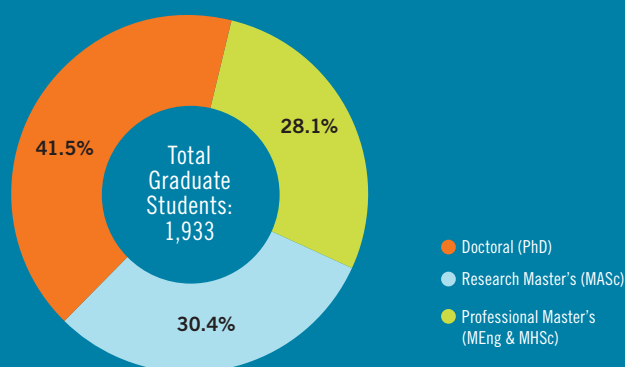
37% GROWTH

in PhD program enrolment in the past six years, and a doubling of our MEng enrolment over the same time frame.

18

ways to tailor the Master of Engineering program through professional specializations in areas such as leadership and entrepreneurship, energy studies, financial engineering and global engineering.

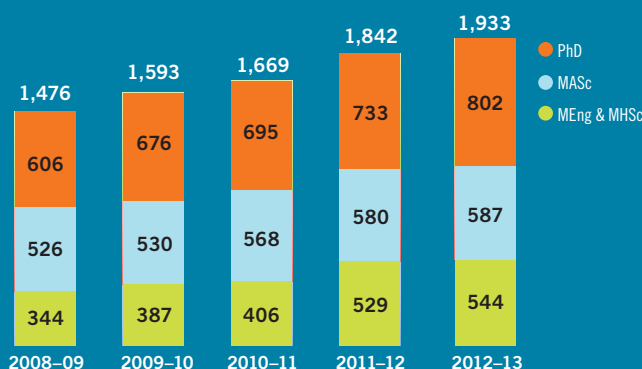
GRADUATE STUDENTS BY DEGREE, 2012–2013



\$9.3M

in scholarships received by graduate students in 2011–2012, including five Vanier Canada Graduate Scholarships.

GRADUATE STUDENT ENROLMENT, 2008–2009 TO 2012–2013



MEngCEM

Master of Engineering in Cities Engineering & Management (MEngCEM) to start in the fall of 2013. The program will enable engineers to address pressing issues that face cities and create innovative solutions that are sustainable, socially engaging and economically feasible.

RESEARCH: WHERE INNOVATION MEETS COLLABORATION

In the fall of 2012, BioZone — a multidisciplinary centre for collaborative bioengineering research in the Faculty of Applied Science and Engineering — celebrated the third phase of its expansion. The increased space and state-of-the-art equipment will support the team's prestigious research, which provides viable solutions to urgent societal needs in energy, the environment and health. A fourth development phase to create laboratory space for large-scale bioreactors began in summer 2013.

Initially launched in 2011, BioZone represents a new kind of engineering that takes advantage of recent advances in molecular biology and genomics and applies them to engineering challenges. With links to research units and partners across the University of Toronto and within

industry, the collective expertise of BioZone spans an incredibly broad range, from medicine and nutrition to energy policy and bioremediation. This provides the perfect environment for innovation in addition to an incredible training ground for more than 80 graduate students and post-doctoral fellows.

The BioZone team, led by Professors Elizabeth Edwards, Radhakrishnan Mahadevan and Emma Master, were recognized in April with U of T Engineering's inaugural Research Leader Award. They were honoured for their success in fostering a collaborative and interdisciplinary approach toward solving some of the world's most pressing problems while furthering U of T Engineering's research profile.

CENTRES AND INSTITUTES CREATED IN THE LAST FOUR YEARS:

- BioZone
- Centre for Global Engineering
- Centre for Research in Sustainable Aviation
- Centre for Resilience of Critical Infrastructure
- Identity, Privacy & Security Institute
- Institute for Leadership Education in Engineering
- Institute for Multidisciplinary Design & Innovation
- Institute for Robotics and Mechatronics
- Institute for Sustainable Energy (formerly Centre for Sustainable Energy)
- The Entrepreneurship Hatchery

200+

industrial partners helped to
facilitate research at U of T
Engineering in 2012–2013.

100+

SPINOFF COMPANIES
FORMED SINCE 1970.

61 RESEARCH CHAIRS

IN 2012–2013

including 26 Canada Research Chairs
and 7 Industrial Research Chairs.



75% GROWTH

in NSERC funding since 2002–2003 and more than three times more CIHR (Canadian Institutes of Health Research) funding since 2002–2003.



Pictured in BioZone's newly expanded lab space are (standing, from left) professors Levente Diosady, Alexander Yakunin, Radhakrishnan Mahadevan, Alexei Savchenko, Elizabeth Edwards (Director), Bradley Saville, (sitting, from left) Alison McGuigan and Grant Allen. Not pictured is Professor Emma Master.

CURRENT INDUSTRIAL RESEARCH CHAIRS

- **Robert Andrews**, NSERC Industrial Research Chair in Drinking Water Research
- **Kamran Behdinan**, NSERC Chair in Multidisciplinary Engineering Design
- **Vaughn Betz**, NSERC/Altera Industrial Research Chair in Programmable Silicon
- **Ron Hofmann**, NSERC Association Industrial Research Chair in Drinking Water
- **Doug Hooton**, NSERC/Cement Association of Canada Industrial Research Chair in Concrete Durability and Sustainability
- **Roger Newman**, NSERC/UNENE Industrial Research Chair in Corrosion Control and Materials Performance in Nuclear Power Systems
- **Sam Sampath**, NSERC/P&WC Industrial Research Chair in Aviation Gas Turbine Combustion/Emissions Research and Design System Optimization

\$63.5M

in research funding received from a combination of government, industry and other sources in 2011–2012.

359

invention disclosures at U of T came from Engineering over the past five years, making us the single-largest contributor.

238

FACULTY MEMBERS ACROSS OUR EIGHT DEPARTMENTS, DIVISIONS AND INSTITUTES IN 2012–2013. Learn about our newest faculty members at uoft.me/academicappointments.

BETWEEN 2007–2008 AND 2011–2012, U OF T ATTRACTED 9 PER CENT OF ALL NSERC FUNDING IN CANADA. THIS IS THE HIGHEST SHARE OF ANY CANADIAN UNIVERSITY.

AWARDS & HONOURS

Our standing as one of the world's top engineering schools and the best in Canada is derived from the achievements of our researchers, faculty, students and alumni. These achievements further increase the visibility of U of T Engineering as a leader — not just in research excellence, but in education, impact and service to the engineering profession.

This past year has been an extraordinary one, with our faculty receiving 26 major international, national and provincial awards and honours. Among these were nearly every award meant to recognize early-career engineers, such as MIT's Top 35 Innovators Under 35, Steacie Fellowships and Young Engineer Achievement Awards from Engineers Canada.

SELECTED FACULTY AWARDS

American Association for the Advancement of Science *Fellow*

Alberto Leon-Garcia (ECE)
Andreas Mandelis (MIE)
Doug Perovic (MSE)

Canadian Aeronautics and Space Institute, *McCurdy Award* David Zingg (UTIAS)

Canadian Association of Physicists/National Optics Institute *Medal for Outstanding Achievement in Applied Photonics* Andreas Mandelis (MIE)

Canadian Science and Engineering, *Hall of Fame* Ursula Franklin (MSE)

Canadian Society for Mechanical Engineering *Robert W. Angus Medal* Javad Mostaghimi (MIE)

Engineering Institute of Canada, *K.Y. Lo Medal* Chul Park (MIE)

Humboldt Foundation *Alexander von Humboldt Research Award* Andreas Mandelis (MIE)

International Academy of Food Science and Technology *Fellow* Levente Diosady (ChemE)

International Congress on Durability of Concrete *V.M. Malhotra Award* Doug Hooton (CivE)

National Sciences and Engineering Research Council *Steacie Prize* Edward (Ted) H. Sargent ***Synergy Award for Innovation*** J. Paul Santerre (IBBME)

New Jersey Center for Biomaterials *Biomaterials Achievement Award* Michael Sefton (ChemE, IBBME)

Royal Society of Canada, *Fellow* Elizabeth Edwards (ChemE) Frank Kschischang (ECE) Jonathan Rose (ECE)

Society of Industrial Microbiology and Biotechnology *Young Investigator Award* Radhakrishnan Mahadevan (ChemE) ***Sir John Kennedy Medal*** Andrew Goldenberg (MIE)

Women of Influence Magazine *Canada's 25 Most Influential Women* Cristina Amon (MIE)

SELECTED GRADUATE STUDENT AWARDS

AUTO21 Poster Competition, *First Place* Aaron Guan (MIE) and Reza Rizvi (MIE)

Banting Postdoctoral Fellowships Jin Young Kim (ECE) Benoit Lessard (ChemE)

IEEE Photovoltaic Specialists Conference *Best Poster Award* Kitty Kumar (MSE)

Vanier Canada Graduate Scholarships Mathew Carias (IBBME) Rhea Liem (UTIAS) Matthew Ooms (MIE) Nika Shakiba (IBBME) Kim Tsoi (IBBME)

More than 35 per cent of all major international and national engineering awards received by Canadian faculty went to professors at U of T Engineering in 2012–2013.

SELECTED UNDERGRADUATE AWARDS

Electro-Federation Canada Scholarship

Muhammad Kazim Ali (ECE) and Alison Ma (ECE)

Trinity College Dublin

Undergraduate Award in Engineering & Mechanical Sciences

Sami Khan (ChemE)

Wharton Undergraduate Consulting Competition

Second Place

Layan Kutob (MIE), Kazem Kutob (MIE),
Huda Idrees (MIE) and Tarek El Fedawy (MIE)

SELECTED ALUMNI AWARDS

Engineers Canada

Award of Journalism Excellence in Engineering

Tyler Irving (ChemE)

Ernst & Young

Entrepreneur of the Year Ontario – Emerging Entrepreneur

Somen Mondal (ECE)

Fédération Aéronautique Internationale (FAI)

The Prince Alvaro de Orleans Borbon Grant

Todd Reichert (EngSci, UTIAS) and Cameron Robertson
(EngSci, UTIAS)

Order of British Columbia

Norman B. Keevil (Geological Engineering)

Professional Engineers Ontario (PEO) and Ontario Society of Professional Engineers (OSPE)

Engineering Excellence Medal

George Nowak (CivE)

Gold Medal

Bert Wasmund (ChemE)

Management Medal

John Bianchini (ChemE)

2012–2013 AWARD HIGHLIGHTS



Professor **Joyce Poon** (ECE) was named one of *MIT Technology Review's* top 35 innovators under 35.



Professors **Yu Sun** (MIE) and **Warren Chan** (IBBME) were both named Steacie Fellows by the Natural Sciences and Engineering Research Council (NSERC).



Professor **Goldie Nejat** (MIE), received the Young Engineer Achievement Medal from Engineers Canada.



Alumnus and MIT Professor **Donald R. Sadoway** was named one of *TIME Magazine's* 100 Most Influential People in the World.



Beverly Bradley, a PhD candidate working in the Centre for Global Engineering, received the Claudette MacKay-Lassonde Scholarship.

OUR DONORS

September 2012 marked the launch of Engineering's component of Boundless: The Campaign for the University of Toronto. The Campaign's vision is built on two central pillars: meeting global challenges and preparing global citizens.

The generosity of our donors, supporters and collaborators plays a vital role in our success in both areas. It also enables us to generate the resources needed to truly achieve our potential. One of our most exciting campaign outcomes will be the construction of the Centre for Engineering Innovation & Entrepreneurship, targeted to open in 2016.

We deeply appreciate the hundreds of people — alumni, friends, faculty, staff and students — who showed their confidence in U of T Engineering by giving last year. In supporting U of T Engineering, our donors are helping to shape the next generation of engineering innovation.



"By investing in the next generation, you provide us with the tools and resources we need to have an impact on the global stage and to lead innovation."

Layan Kutob, 2013 Industrial Engineering graduate
Chair, National Business and Technology Conference
Named one of The Next 36: Canada's Entrepreneurial Leadership Initiative

DONORS OF \$25,000 OR MORE FROM MAY 1, 2012 TO APRIL 30, 2013

Peter and Jocelyn Allen

John Donald Barber

William R.C. Blundell

Dan Cornacchia

Walter Curlook

Melanie Duhamel

Patrick Yuk-Bun Fung

Stan Gasner

Hatch

Hill and Schumacher Professional Corporation

Intel Corporation

Constantine E. Karayannopoulos

The Kenneth M. Molson Foundation

Anthony Lacavera

Robert M. MacGillivray

Donald Mackay

Estate of J. Edgar McAllister

Robert Mee

Alvin Ho Kwan Mok & Jenny Mok

Petro-Canada Lubricants

David F. Poirier

Ewing A. Rae

Melinda Mary Rogers

Som and Kerry Seif

P.C. and Sharron Stangeby

Estate of Donald R. Steele

Texas Instruments Incorporated

Timbers Consulting Inc.

William and Kathleen Troost

Lorie Waisberg

Paul B. Walters

W. Murray Wonham

Tom and Ruth Woods

Zak Company for Engineering & Trading



THE TROOST FAMILY

William (Bill) Troost — a 1967 graduate of chemical engineering — has provided exceptional volunteer service to U of T Engineering for more than a decade. As a long-time supporter of U of T Engineering's unique Institute for Leadership Education in Engineering (ILead), Bill and his wife Kathleen wanted to see it have the kind of space needed to grow and flourish. The Troosts' interests in engineering leadership align with ILead's goal to increase the capability of engineers to apply their technical knowledge through a greater understanding of leadership. Their \$2-million contribution will support the creation of the new home for ILead in the Centre for Engineering Innovation & Entrepreneurship.



PETER ALLEN

Peter Allen, a 1962 civil engineering graduate, and his wife (and fellow U of T alumna) Jocelyn Allen share a passion for creative excellence and innovation. With a keen appreciation of the ways in which physical space can support — or diminish — creativity, invention and design, the Allens recognized early on the impact that the new Centre for Engineering Innovation & Entrepreneurship could have on generations of future engineering students and researchers. Through a generous gift of \$1 million, the Allens provided a valuable early investment to build a highly flexible, interdisciplinary and design-oriented space that will help to spark innovation among students and faculty alike.



WALTER CURLOOK

Walter Curlook — who holds his bachelor's, master's and doctoral degrees from U of T Engineering — is a visionary and innovator focused on the commercial application of research. He has left a lasting imprint on the mining and metallurgical industry worldwide and within the Department of Materials Science & Engineering as a Distinguished Adjunct Professor and a senior volunteer on the Department's Advisory Board. To enable better teaching and research facilities within the Department, Dr. Curlook is supporting the creation of two new labs with a \$1-million gift. His contribution will also help to purchase new lab equipment.



SOM SEIF

Som Seif is the President and CEO of Purpose Investment Inc. and has been a dedicated volunteer at U of T Engineering since graduating from the industrial engineering program in 1999. A member of the Department of Mechanical & Industrial Engineering Board of Advisors, he also serves as a lecturer, mentor and consultant on new initiatives and programs. To inspire the next generation of engineering business leaders, he generously donated \$250,000 to establish scholarships for industrial engineering students with a passion for business and entrepreneurship. He continues to encourage entrepreneurially minded students with awards to pursue their own dreams of creating a successful startup through The Entrepreneurship Hatchery.

FINANCIAL REVIEW

We continue to strengthen our financial position with total revenues of \$170.3 million. The 7-per-cent increase over last year was accompanied by careful cost containment and strategic resource allocation.

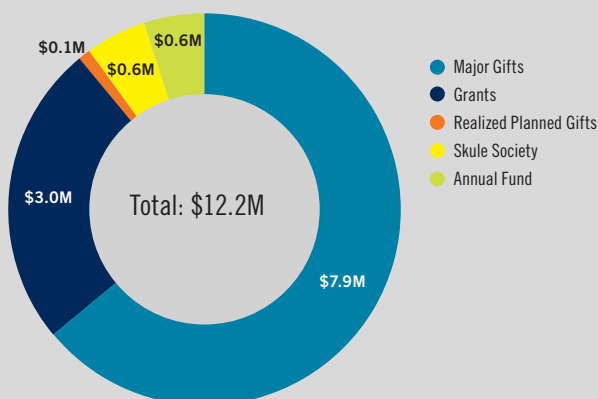
With revenue sources under extreme pressure and amidst ongoing economic uncertainty, we are taking a proactive approach by retaining sufficient financial operating reserves.

With declining governmental support, it has never been a more important time for external support — through the Boundless Campaign, industrial collaboration or other partnerships. Our generous donors have enabled us to make incredible strides in advancing our ability to innovate and educate. In the last fiscal year, philanthropic

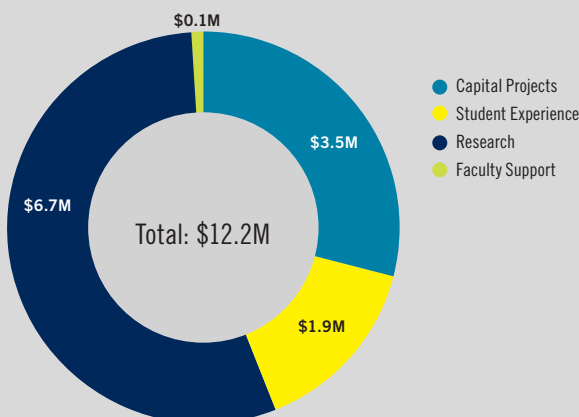
contributions totaled \$12.2 million, including \$9.2 million in gifts and \$3 million in grants. This brings our Campaign total to over \$88 million of our \$200-million goal. More than 35 per cent of these gifts were designated toward supporting the construction of the Centre for Engineering Innovation & Entrepreneurship, and all other donations are supporting the development of our students through scholarships and unique opportunities, as well as supporting ongoing research.

Looking ahead, philanthropy and collaboration will play an even greater role in ensuring U of T Engineering remains the premier engineering school in Canada and among the very best in the world.

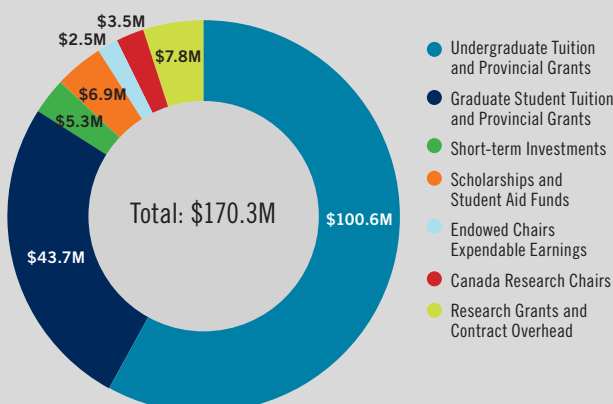
FUNDRAISING RESULTS, 2012–2013



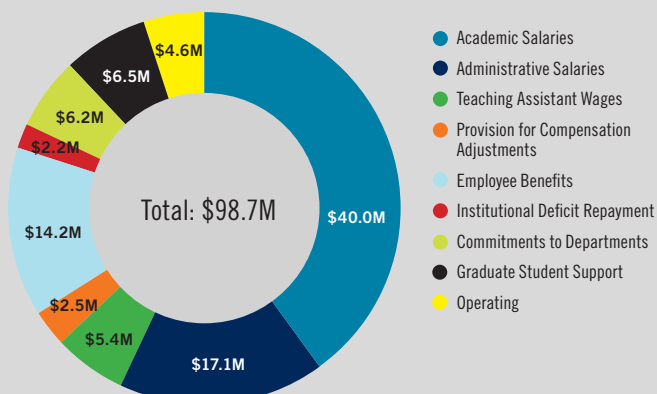
GIFT DESIGNATIONS, 2012–2013




REVENUE SOURCES, 2012–2013



TOTAL OPERATING BUDGET: BREAKDOWN BY EXPENSE, 2012–2013





"[This was] a rare opportunity to work at the leading edge of engineering on an incredibly challenging and engaging project. It's where passion and science meet that you will find the innovative discoveries."

Dr. Todd Reichert, pilot of Atlas and co-founder of AeroVelo Inc.

MAKING AVIATION HISTORY

An aerospace team with strong U of T Engineering connections made history by winning the \$250,000 AHS Igor I. Sikorsky Human-Powered Helicopter Prize, for the first-ever sustained flight of a human-powered helicopter.

The American Helicopter Association confirmed that AeroVelo Inc., founded by U of T Engineering alumni Dr. **Todd Reichert** and **Cameron Robertson**, successfully met the prize's rigorous conditions: a flight duration of 60 seconds, reaching an altitude of three metres, while remaining in a 10-metre square.

Many teams have tried, and failed, to win the prize since it was announced in 1980. But on June 13, 2013, AeroVelo's Atlas helicopter rose to an altitude of roughly 3.3 metres, maintained flight for approximately 65 seconds and drifted no more than 10 metres. Reichert, who holds a land speed record for cycling, was the pilot for the record-breaking feat.

AeroVelo, which includes several current U of T Engineering students among its team members (pictured at right), has been working on Atlas since May 2012.

Reichert and Robertson both graduated from the Engineering Science program and then completed graduate degrees at the University of Toronto Institute for Aerospace Studies, where they founded U of T's Human-Powered Vehicle Design Team.

In August 2010, the team's first project — a human-powered ornithopter called Snowbird — also made aviation history by achieving the age-old dream of human-powered bird-like flight.





WHERE INNOVATION THRIVES

- 1 At spring convocation, U of T Engineering presented alumnus **Paul Cadario** with an honorary doctorate for his distinguished career improving living standards of people in the developing world. A former senior manager at the World Bank, Cadario is now a Distinguished Senior Fellow in Global Innovation at U of T and also mentors students at the Centre for Global Engineering and in the Master of Global Affairs program.
- 2 Chemical Engineering's **Satita Viddayakorn** was one of over 1,500 U of T Engineering students who earned degrees at convocation in June.
- 3 Professors **Angela Schoellig** and **Tim Barfoot** share their robotics innovations at the U of T Institute for Aerospace Studies (UTIAS). Robots of all shapes and sizes crawled, swam and flew to Toronto in late April for the NSERC Canadian Field Robotics Network trials.
- 4 First-year chair Dr. **Micah Stickel** applies the latest findings in engineering education research in his classroom. The quality of a U of T Engineering education continues to develop, with innovative teaching spaces planned for the Centre for Engineering Innovation & Entrepreneurship and new opportunities for students to specialize in areas like nuclear engineering, which is now one of 11 cross-disciplinary minors and certificates available to undergraduates.
- 5 Student groups like the Engineering Society's Lady Godiva Memorial Bnad [sic] exemplify U of T Engineering's distinctive school spirit on campus and across the city. They are one of 87 engineering-specific clubs on campus.
- 6 Under the guidance of Professor **Paul Santerre**, fourth-year Engineering Science student **Ben Ouyang** took first place in the national Sunnybrook Prize competition for developing an elastic biomaterial substance with highly tuneable mechanical properties which could lead to better drug delivery systems.
- 7 First-year students kickstarted their academic careers with an inspiring lecture from one of U of T Engineering's most successful graduates, entrepreneur and telecommunications executive **Anthony Lacavera**.
- 8 Electrical & Computer Engineering PhD candidate **James Dou** demonstrates an innovative 'lab-on-a-chip' device. Dou, along with post-doctoral fellow **Lu Chen** and **Rakesh Nayyar** of Toronto's Cytoquest Corporation, developed this affordable and efficient HIV monitoring technology with Professor **Stewart Aitchison**. This year, the project was awarded one of 15 grants from Grand Challenges Canada, an organization dedicated to improving the health and well-being of people in developing countries by integrating scientific, technological, business and social innovation.
- 9 Chemical Engineering graduate **Sami Khan** was one of 39 recipients of the 2012 Trinity College Dublin Undergraduate Awards, a prestigious international honour that recognizes top undergraduate research from across the globe. Chemical Engineering Professor and Chair of the Division of Engineering Science **Mark Kortschot** supervised Khan's work on a novel toilet design for developing countries, which won first place in the Engineering & Mechanical Sciences category.
- 10 With Professor **Axel Guenther**, Mechanical Engineering PhD student **Lian Leng** is developing a groundbreaking printing device that forms sheets of soft tissue that closely mimic human tissue.



Engineering

BOUNDLESS

University of Toronto
Faculty of Applied Science & Engineering
Office of the Dean
44 St George Street, Toronto, Ontario M5S 2E4 Canada
engineering.utoronto.ca