





WELCOME

Universities have a crucial and unique role to play in helping to meet the challenge of climate change. The University of Toronto, for its part, continues to make contributions to advancing the science of climate change and to informing concrete actions and public policy in response, through its research, teaching, operations, and outreach activities. Faculty, staff, and students across our three campuses are working on every aspect of this challenge. Indeed, as a publicly supported academic institution, we feel a strong sense of social responsibility to take action. The third Sustainability Yearbook offers highlights of the actions taken by the St. George campus community.

One recent development is the new Presidential Advisory
Committee on the Environment, Climate Change and
Sustainability (CECCS). This committee builds on the University
of Toronto's strong record of operational sustainability and our
institution's broad range of excellence in research and teaching
around sustainability and climate change. Under the committee's
leadership, U of T has joined the University Climate Change
Coalition; a group of 13 leading research universities in North
America committed to reducing greenhouse gas (GHG) emissions
on their own campuses and in their communities. In doing so, the
University has set a goal to reduce GHG emissions by 37 per cent
from 1990 levels by the year 2030. Further details regarding the
CECCS and many other remarkable initiatives can be found in the
pages that follow.

Climate change remains one of the world's greatest challenges, and the University of Toronto community—our brilliant students and alumni, faculty and staff—are working hard to meet that challenge. Congratulations to the dedicated team at the Sustainability Office on the publication of the third Sustainability Yearbook. And thank you; it truly is Greener Here!

Meric S. Gertler President



"Climate change remains one of the world's greatest challenges, and the University of Toronto community—our brilliant students and alumni, faculty and staff—are working hard to meet that challenge."



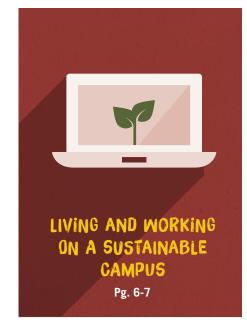
Image credit: Lisa Sakulensky

TRADITIONAL LAND ACKNOWLEDGEMENT

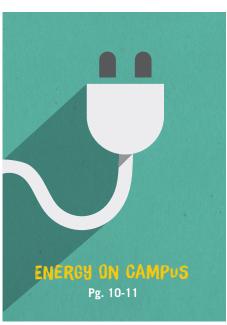
We wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and most recently, the Mississaugas of the Credit River. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

EXPLORE A GREENER U OF T













SUSTAINABILITY ACROSS U OF T

SUSTAINABILITY OFFICE
Pg. 18-19

Cover photograph: Jonathan Sabeniano. Primary photographer: Jonathan Sabeniano.

Sources: for further details about any of the facts in this Yearbook, please contact the Sustainability Office at sustainability@utoronto.ca. Concept and design: Pilot PMR. Editors of the Yearbook (Staff): Dione Dias & Jess Dawe.



Leadership and Community Engagement

Partnerships, outreach and other ways the St. George campus plays a leading role in the wider Toronto ecosystem



Image credit: Laura Pederson



Image credit: Ken Jones

U of T and the City

The challenges of sustainability don't stop at anyone's borders. This is why partnerships like the one between U of T and the City of Toronto, recently created in a memorandum of understanding, are so vital. The new agreement will formalize some of the great work the two institutions have already done to make the city and the campus safer, more inclusive and especially, greener. At the centre of this ongoing partnership will be the Future Talks initiative, a massive engagement project around sustainability with a goal of helping the city find innovative ways to reduce harmful emissions by 2050. "Being able to work with the city

helps us gain a better understanding of the practical challenges of doing things like large-scale public engagement," said Sara Hughes, assistant professor of political science and one of the project's leads. The goal of the proposed five-year initiative is to engage 100,000 citizens of Toronto in exploring the kind of city they want to live in. The project is led by Professor John Robinson and, in addition to Hughes, includes Wendy Wong, Tamer EI-Diraby and Blake Poland.

DID YOU KNOW?



300 +

In April 2017, the U of T Sustainability Summit brought together 300+ individuals to learn and discuss how we can meet the challenges of climate change!



John Robinson

on Leadership and Community Engagement



Professor, Munk School of Global Affairs and School of the Environment; first-ever Presidential Advisor and Chair of Committee on the Environment, Climate Change, and Sustainability

Increasingly, universities are being called upon to contribute directly to the big challenges faced by society. In response, there is a major opportunity for universities to work as an agent of change with partners from the private, public and civil society sectors to create living labs to implement and evaluate the technical, economic and behavioural aspects of integrated sustainability solutions, both on and off campus. This means that the campus and the surrounding community become experiments in sustainability where University staff, students, faculty and partners in the community can test, teach, learn, apply and share the outcomes of their inquiries.



Food Systems Lab

The Food Systems Lab was founded in 2016 by Tammara Soma (PhD candidate, Department of Geography and Planning) and Belinda Li (Tetra Tech) to tackle the issue of food waste in the City of Toronto. The Lab uses a social innovation method by collaborating with diverse stakeholders—including industry, policymakers, farmers, retailers, Indigenous elders, migrant farm workers and food processors—to better understand the issue of food waste and develop systemic solutions as well as prototype interventions. The Lab completed three workshops and developed five solutions in 2017.



SHORELINE CLEANUP

U of T students participating in a community beach clean-up.



MOVIE SCREENING

The Sustainability Office partnered with Science and Engineering Engagement at U of T to offer a documentary screening and panel discussion for the community.



Q&A with Bikechain

Beth Austerberry, Executive Director



Q: What is Bikechain?

A: Bikechain is a do-it-yourself bike shop located on campus. We teach you how to fix your own bike, offer free bicycle lending for U of T students and do various workshops and events. Volunteers are always welcome!

Q: What are you up to this year?

A: We're hoping to build up more used bikes from donated frames over the winter to sell at our spring bike sale.

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Living and Working on a Sustainable Campus

Whether it's in a laneway house or a greenhouse, the campus community is finding ways to reduce our environmental impact

HOW HAS WORKING AT U OF T ENGOURAGED YOU TO GO GREEN?

The support I've received from all corners of the University—from Dig In! Campus Agriculture Network, the Department of Anthropology, and Facilities & Services—has fostered the growth of my interests in sustainability issues in many ways. While working here I've had the chance to start green initiatives like the Anthropology greenhouse and garden, and having that kind of access to a greenhouse encouraged me to learn how to grow food and got me involved with Dig In!.

Are you a staff member at U of T? Visit: **uoft.me/GreenAmbassadors**



Kristy Bard
Staff at U of T

WHAT CAN YOU DO AS A PROFESSOR TO MAKE A COURSE MORE SUSTAINABLE?

All of my courses are paperless, which lowers costs and allows for faster and better feedback to students. I start every course by telling students about the culture of sustainability at U of T. Another way to make courses more eco-friendly is to give students the option to attend any class online; this increases scheduling flexibility for students and allows them to commute less, saving time, money and fuel.

Are you an instructor at U of T? Visit: **uoft.me/GreenCourses**



Donald BoyesAssociate Professor,
Teaching Stream, Department
of Geography & Planning

HOW HAVE YOU INCORPORATED SUSTAINABILITY INTO YOUR LIFE ON CAMPUS?

I moved to downtown Toronto from the ocean-and-forest landscapes of British Columbia, so I'm always looking to stay connected with nature. Living sustainably can be one of the most important ways to do that, but I also find it comforting to explore all the green spaces in and around campus. One of the best ways to do that is to get involved: taking U of T Outing Club trips and volunteering at the Hart House Farm has given me a chance to learn more about sustainable living, too.

Are you a student living in residence? Visit: **uoft.me/GreenRes**



Ruby Tang Second-year student living in residence



Anne Macdonald

on Living and Working on a Sustainable Campus



Director, Ancillary Services

The agricultural sector—from farm to table—makes up 1/3 of all humaninduced greenhouse gas emissions, and a campus's food footprint is not exempt from these emissions. As the main food provider on St. George campus, Food Services is dedicated to acting as a leader around sustainable food procurement and programs. It has brought food purchasing under its direct control, over 60% of which is grown, raised or produced right here in Ontario. Additionally, Food Services is committed to raising awareness around how diet and consumer choices impact the environment with programs like Veggie Mondays and Lug-a-Mug.



iRelax

Stress and anxiety and feeling uneasy and overwhelmed are ongoing struggles for post-secondary students. That's where initiatives like iRelax come in. Located on the fourth floor of the Faculty of Information, iRelax is U of T's first secular, ethically and sustainably sourced mindfulness resource area. Its goal is to assist personal development, stress reduction and increased focus throughout the year. It's the perfect place to clear your mind—maybe so you can think of more ways to make it greener here! iRelax was envisioned and championed by Kathleen Scheaffer, Outreach Librarian, Inforum, Faculty of Information.



Image credit: Baird Sampson Neuert Architects

Net-Zero Laneway Housing

The Laneway Housing Pilot is being developed within the Huron-Sussex neighbourhood of the St. George campus, as part of a larger initiative to deliver affordable infill housing within walking distance of the campus. These ultra-low-energy prototypes will utilize prefabricated "passivehouse" envelope components and are designed to achieve net-zero energy (i.e., energy consumption is approximately equal to the amount of renewable energy generated on the site) using photovoltaic solar energy, earth tubes and heat recovery ventilation. Construction is targeted for spring 2018.

DID YOU KNOW?

Robarts Library study carrels in the stacks (floors 9–13) are being refreshed and are getting an LED upgrade! This will significantly reduce energy (and GHG emissions), plus make for a more pleasant study environment!

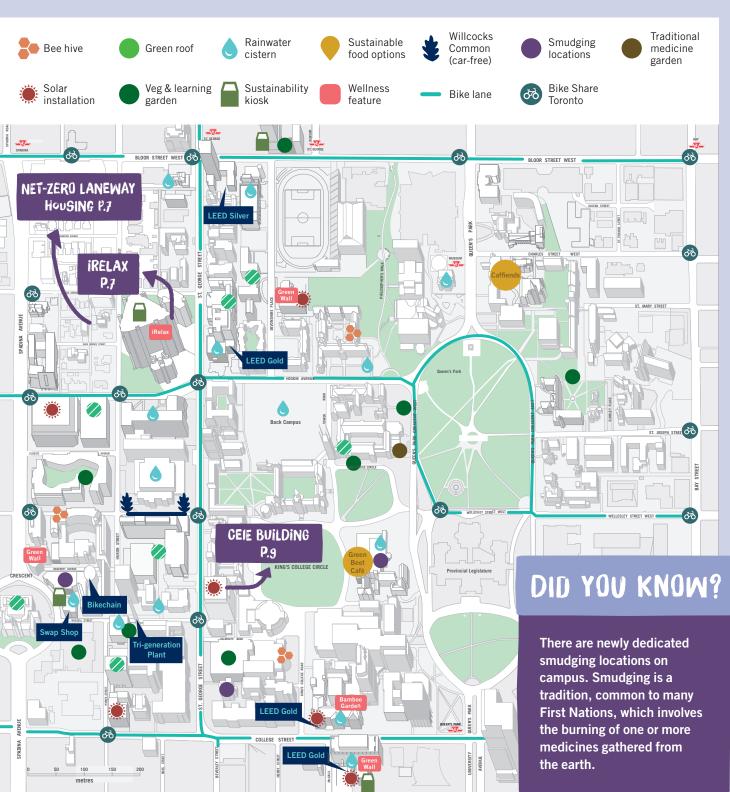






Natural and Built Environment

From building design to groundskeeping, we're making sure we're greener—in every sense of the word





Marianne Touchie

on Natural and Built Environment



Assistant Professor, cross-appointed in Civil Engineering and Mechanical Engineering, Director of the Building Energy and Indoor Environment (BEIE) Lab

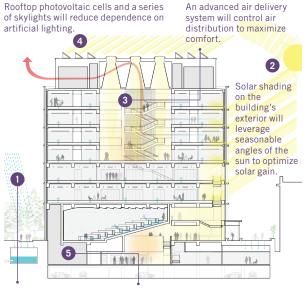
The built environment is inextricably linked to the natural environment— even though it may not feel like it in downtown Toronto! Our buildings are and will be impacted by the effects of climate change, including hotter summers and more frequent wind and rain events. But, in turn, our building energy use has a tremendous impact on greenhouse gas emissions. To reduce this impact, we need to improve the energy performance of our buildings while maintaining, or ideally improving, the occupant experience.

Centre for Engineering Innovation & Entrepreneurship (CEIE)

A sustainable home for research excellence

"Opening in spring 2018, the U of T's Centre for Engineering Innovation & Entrepreneurship integrates state-of-the-art sustainable design features that maximize energy efficiency, meeting or exceeding many Tier 2 Toronto Green Standard performance measures," said Cristina Amon, Dean of the Faculty of Applied Science & Engineering at U of T. The graphic on the right details some of the building's impressive features.

Image courtesy of Montgomery Sisam Architects and Feilden Clegg Bradley Studios



Rainwater capture for landscape irrigation.

Vibration isolation to reduce the transfer of vibration-generated noise. This will eliminate noise pollution.

Making Green Buildings the Standard



Current Efficiency U of T Eff Design Standard Design St

St. George campus has more than 120 buildings, with dozens over 100 years old! We want to make sure they are all as comfortable and energy efficient as possible. That's why we upgraded building design standards to optimize comfort and minimize energy use. Our new standards require energy use to be 20–40% better than current energy efficiency guidelines—one of the best for low-energy designs in North America!

Clearing the Air Around Campus

Gasoline-powered equipment adds harmful gases to the air we breathe—you can tell by the odours and smoke they release, not to mention the noise they make! These pollutants negatively impact our health and ability to enjoy activities outside. So how can we "green" our ground maintenance operations? In 2017, Facilities & Services started to replace older, polluting lawn mowers with rechargeable, battery-powered models. This reduces air and noise pollution at the source!





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Energy on Campus

Some bright ideas to keep campus a great place to live, work and learn



Reducing our Footprint on Campus

We are using more solar energy on campus to generate electricity and reduce our environmental footprint. In 2017, we added the 67 kW photovoltaic system on the roof of the Exam Centre. It generates about 75,000 kW-hours a year. Look for new solar systems at the Bahen Centre for Information Technology and CEIE (see page 9) in 2018.

Cap and Trade

Ontario's cap and trade program is designed to help fight climate change through reductions in greenhouse gas emissions. Producing over **25,000 tonnes of GHGs a year**, the St. George campus is an active participant in this program and continues to carry out initiatives to reduce our carbon footprint. Ongoing projects include upgrading our air conditioning, heating and temperature control systems.

25,000 might seem like a lot! But remember, St. George campus has the equivalent of 170 varsity football fields of floor area in over 120 buildings. All of that needs to be maintained, heated and cooled. Overall, universities in Ontario account for only 1% of total GHG emissions.

Kevin Leong Utilities Budget & Planning Analyst, Facilities & Services



DID YOU KNOW?

Facilities & Services at the St. George campus has 6 hybrid and 4 electric vehicles in its fleet.

6 Hybrids

Electric Vehicles





Paul Leitch on Energy on Campus



Director of Sustainability, Facilities & Services

Energy use is central to climate change, as it is a large source of greenhouse gas emissions. Finding ways to reduce energy use on campus through projects such as lighting retrofits, solar panels, building controls and our individual actions are necessary to reducing our impact. Using resources beyond energy (like water, air, sun, wind and rain) in innovative and efficient ways must also be an ongoing and sustained effort by all for us to benefit from a cleaner, comfortable, sustainable campus and lifestyle.



Enlightening Campus

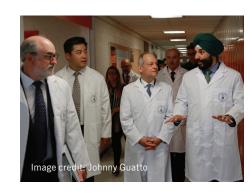
Since 2016, we have installed over 100,000 LED lights, saving enough electricity to light more than 2,000 homes each year. One of these retrofits is in the stairwell of the Dalla Lana School of Public Health building. These new lights dim down to 20% when unoccupied and brighten up to 100% as someone enters.

Fume Hood Testing

With more than 1,000 fume hoods in labs across campus, the Sustainability and Environmental Health & Safety offices worked collaboratively to improve the annual testing of fume hoods by developing an innovative laser tool that measures the energy efficiency and safety of the fume hoods. This new testing will eliminate 6,200 tonnes of CO₂ equivalent emissions a year!



U of T Lab Retrofit: Investing in our Future



U of T is known internationally as a research powerhouse, and investing in our research infrastructure is

important to maintain this excellence. This is why President Meric Gertler referred to the almost \$190 million funding for the Lab Innovation for Toronto (LIFT) project as an historic investment in Canadian science and innovation—an exciting and visionary collaboration between U of T and the federal and provincial governments.

The LIFT project will lead to the renewal of 47% (nearly half) of U of T's research space—labs that are on average 50 years old and comprise

more than 50,000 square metres of inefficient space (enough to take up 15 soccer pitches). "The renovations will modernize U of T's research labs to increase usable space and enhance the quality of the research and learning environment while also improving air handling, climate and electrical systems," said Scott Mabury, Vice-President, University Operations. Rejuvenating existing facilities and making them more efficient is definitely more sustainable than building all-new labs.

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Waste and Materials Management

Finding innovative ways to reuse, reduce, repair and recycle (in that order!)

Moving Towards Zero Waste



We recycle coffee cups on campus! This differs from the City of Toronto, allowing us to recycle almost 100,000 coffee cups a month and supports our 70% waste diversion rate—one of the highest among North American institutions!



Mark Simpson

on Waste and Materials Management

Director, Building Services, Grounds & Trades, Facilities & Services



Living in cities with waste management strategies and working at a large institution like U of T, we really need to think about where our trash ends up when we throw it "away." The after-effects of waste disposal are removed from our daily lives, but it's important for us to think about purchasing and consumption patterns and how they can negatively, or positively, impact the environment around us. At U of T, we are committed to making sustainable waste management a priority, which is why we reuse items, divert waste with our recycling and green bin programs and educate the community.

Reducing Waste by Reusing



Environmental Protection Services are reducing waste on campus by installing a pail washer! Pails are used by labs across campus to collect waste that is then properly disposed of. By washing and reusing, we could see more than 30 kg a month of plastic waste diverted from the landfill!



Collaboration: Waste Research

Recognizing that sorting waste and recycling is a complicated, often annoying task, researchers Te Chen and Aaron Rambhajan have created new waste bin labels to make sorting a simple task for everyone. They are working with Facilities & Services on this project and are supervised by professors John Robinson and Michael Mack.



Image credit: Ernie Lopez

Student Accounts Project

This effort successfully automated the process of reconciling its financial information between ROSI and the SAP accounting system. This newly developed functionality has eliminated the previous, paper-based monthly reconciliation approach and has reduced both staff-related time as well as more than 300,000 pages of paper reports yearly! This project, under Audrey Cheung, Lorena Gaudio and the EASI development team, won the Outstanding Staff Team Award 2017 from the Vice-President, University Operations!



Q+A with

Roots & Shoots

Rutu Patel & Sabrina Lau, Co-leads

Q: Who are Roots & Shoots?

A: We are the U of T chapter of Jane Goodall's Roots & Shoots! We encourage and empower our peers to become active community leaders who take action to protect people, animals and the environment.

Q: What are your plans for the 2017-2018 school year?

A: We launched the "No Waste November" campaign in collaboration with our global partners. We encouraged people to give up one waste item for the month and we supported them by sharing resources and connecting their local effort to a global campaign!





Education, Research and Innovation

Exploring the next frontiers of sustainability, from capturing greenhouse gases to getting rivers back on track



Debra Wunch

Assistant Professor,
Department of Physics,
School of the Environment

My work involves measuring methane around the city using mobile spectrometers. We're interested in learning about overall methane emissions and locating their sources. Methane is a strong greenhouse gas and significant contributor to rising temperatures and other impacts of climate change. If we can locate the sources of methane within the city and reduce or stop those emissions, we have the opportunity to reduce the city's climate impacts.



Hilary Inwood

Lead, Environmental & Sustainability Education, Department of Curriculum, Teaching & Learning, Ontario Institute for Studies in Education (OISE)

Education is key to helping our communities make cultural and behavioural shifts to living more sustainably. As part of OISE's Environmental & Sustainability Education initiative, I am working in collaboration with the Toronto District School Board's EcoSchools program to research how to deepen teachers' leadership in environmental learning.



Joseph Desloges

Professor, Department of Geography & Planning and Department of Earth Sciences, Faculty of Arts & Science

Land surface erosion has made some rivers and streams unstable, lower-quality environments with reduced prospects for long-term sustainability. Natural Channel Design (NCD) has been introduced as a way of returning rivers to more natural equilibrium conditions with higher levels of physical and biological functionality. Our research is examining the effectiveness of NCD in the context of "normal" geomorphologic processes.

Image credit: Camilla Pucholt

DID YOU KNOW?

U of T signed on to the Beyond Benign Green Chemistry Commitment (GCC). In making this commitment, the Department of Chemistry will integrate green chemistry instruction as a core teaching mandate, ensuring that all undergraduate chemistry students are trained in green chemistry principles!





Aimy Bazylak

Associate Professor, Department of Mechanical & Industrial Engineering and Director, Institute for Sustainable Energy

Reducing carbon emissions, mitigating anthropogenic climate change and achieving geopolitical energy equality hinge on efficiently storing and generating clean power. My team is advancing technologies for clean energy storage and conversion, such as fuel cells and electrolyzers, which are vital for a sustainable energy future.

Image credit: Jeremy Sale



Geoffrey Ozin

University Professor of Chemistry in the Faculty of Arts & Science and Canada Research Chair in Nanochemistry

The solar fuels team is working on a process called heterogeneous catalysis. By capturing CO₂ emissions and with the input of renewable energy, particularly sunlight and water electrolysis, we are attempting to create synthetic fuels to complete a carbon neutral cycle. If successful, this could help enable energy security, environmental protection and climate control—all key ingredients for a sustainable future.



Derek Newton

on Education, Research and Innovation



Assistant Vice-President, Innovation, Partnerships & Entrepreneurship, commenting on sustainability and innovation at U of T Climate change is a global challenge that requires leadership and action from educational institutions around the world. U of T is no stranger to this with a record of global leadership in research and innovation around sustainability and climate change. We have over 500 faculty members—including 10 Canada Research Chairs—and thousands of graduate students conducting groundbreaking research and innovation in areas of sustainability, energy, the environment and beyond.

What's Sport Got to Do With It?

The UN's 2030 Agenda and Sustainable Development Goals specifically mentions the role sport can play in meeting international sustainability and climate change goals. Yet, there remains significant research to assess how sport might best make a positive contribution. That's why, in 2017, the **Faculty of Kinesiology & Physical Education** organized a research symposium to assess the role of sport in the pursuit of sustainable development. The symposium was organized by Professor Simon Darnell and postdoctoral student Robert Millington.

Driving Change

Havelaar, creator of a 100% emissions-free truck, and the U of T Electric Vehicle (UTEV) Research Centre secured a major investment to support collaborative research into next-generation electric vehicle technologies.





Sustainability Across U of T

St. George, Mississauga and Scarborough

Committee on the Environment, Climate Change, and Sustainability (CECCS)

In January 2017, President Gertler announced the Committee on Environment, Climate Change, and Sustainability (CECCS). This was one of the key recommendations in *Beyond Divestment: Taking Decisive Action on Climate Change*: Administrative Response to the Report of the President's Advisory Committee on Divestment from Fossil Fuels.

WHO IS ON THE CECCS?

16 staff, students, faculty and alumni from all 3 campuses—connecting research, education and operations.

WHAT IS THE PURPOSE OF THE CECCS?

Key strategies:

- promote the integration of operations and academics
- develop partnerships on sustainability issues with the various communities inside and outside our campuses
- make sustainability curriculum opportunities available to students
- help make sustainability part of the University's core identity

WHAT HAS THE CECCS DONE SO FAR?

The CECCS has created 3 subcommittees to fulfil its purpose:



Campus as Living Lab



Agent of Change



Curriculum Innovation

READ THE FIRST ANNUAL 2017 CECGS REPORT: UOFT.ME/2017CECGS

DID YOU KNOW?



A preliminary inventory of 6 divisions across U of T found 614 unique sustainability courses, 147 of which had community-engaged learning components!



Image credit: Chelsea Dalton

UTM Highlights

University of Toronto Mississauga (UTM) held its fourth annual community bike ride in partnership with the Mississauga Cycling Advisory Committee. The event is a fun, casual bike ride that highlights the best cycling routes on campus and around the community. The ride is open to everyone!



Image credit: Just Vertic

The produce at UTM got a lot fresher this year thanks to **Just Vertical**!



Image credit: Ken Jones

UTSC Highlight

The University of Toronto Scarborough (UTSC) Sustainability Office and Library co-hosted the first Sustainability Maker Challenge! This event challenged participants to envision how maker culture—best described as "do-it-yourself for the 21st century"—could help achieve the United Nations Sustainable Development Goals. It paired 50 students across all disciplines with mentors from businesses, organizations and UTSC faculty.



Winner! 2017 Canada's Greenest Employer

For the fourth year, the University of Toronto was named one of Canada's Greenest Employers! This is a national recognition organized by the Canada's Top Employers project. The yearly submission is a collaborative process among all campuses and is coordinated by the Office of the Chief Operations Officer, Property Services and Sustainability on the St. George campus. U of T was selected based on our unique environmental initiatives and programs, our success in reducing our eco-footprint and more!





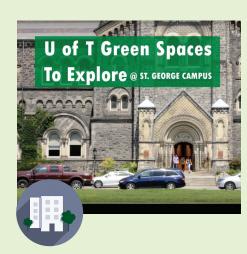
Sustainability Office

As a resource to the St. George campus, we educate, inspire and connect



LEADERSHIP AND COMMUNITY **ENGAGEMENT**

We showcase our campus's sustainability We celebrate the environmental features through tours and inspire people with ideas to bring back to their communities!



NATURAL AND **BUILT ENVIRONMENT**

Green and natural spaces are great for our mental health! Look for our Green Hack videos and "U of T Green Spaces Tour." uoft.me/GreenHacks



LIVING AND WORKING ON A SUSTAINABLE CAMPUS

community on campus at our annual Green Gala. uoft.me/GreenGala



ENERGY ON CAMPUS

Through The Pledge, we encourage staff, students and faculty to reduce their eco-footprint on campus.

Find out more: uoft.me/ThePledge



WASTE AND MATERIALS MANAGEMENT

We partner with Get Crafty at Hart House to offer Repair Cafes, recycled art projects and more.



EDUCATION, RESEARCH AND INNOVATION

We work to bridge the gap between University operations and academics by participating in campus-as-a-living-lab opportunities for students. Students work on projects around waste, water and more.



2017-2018 Sustainability Office staff and Work Study team

DOES THIS GREEN WALL LOOK FAMILIAR?

LEED Gold certified in 2009, the Exam Centre has the distinction of being U of T's first LEED Gold project and has received several recognitions over the years. In 2017, it was awarded **First Place** in the Open Category at the Canadian Association of University Business Officers (CAUBO) Quality and Productivity Awards, for its "Triple Bottom Line Work Environment."



2013-2014 and 2015-2016 Yearbooks can be found online at uoft.me/SustainYB

DID YOU KNOW?

Every year, we hire Work Study students to assist us with sustainability programs, projects, events, outreach and more. Check it out: uoft.me/SOjobs.



FIND US ON SOCIAL MEDIA @SUSTAINABLEUOFT





