

The Civilian

One Department, Two Great Programs: Civil and Mineral Engineering / Issue 16 / December 2013

A Summer in Istanbul

**BUILDING SUBWAYS UNDER ONE
OF THE WORLD'S LARGEST CITIES**

Honoris Causa

**PAUL CADARIO RECEIVES
HONOURARY DOCTORATE**



The Civilian

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What happens around us is amazing, and it's even more special if we understand the causes.
- Our Energetic Earth, Page 11



The National Taiwan University Rankings that measure the impact of scientific publications were recently released. I am pleased to report that the Department of Civil Engineering at the University of Toronto ranked 8th in the world and 1st in Canada. This is a great testament to the innovative research that the dedicated faculty and students are involved in across the Department. The award-winning research of **Dr. Samah El-Tantawy** (PhD 1T2), working with **Professor Baher Abdulhai**, on smart traffic lights is a great example of the socially relevant work under way in the department that will lead to reduced environmental and economic impacts, particularly in cities.

This has been a banner fall for accomplishments of alumni of the department. **Anna Dunets Wills** (CivE 7T6) was inducted into the Engineering Hall of Distinction, **Paul Cadario** (CivE 7T3) was awarded the Engineering Alumni Medal, and **Samantha Espley** (GeoE 8T8) won the 2T5 Mid-Career Achievement Award. The great support of the department by **Andy Kikites** (CivE oT2, MEng oT4) was recognized with a UofT Arbour Award, and **Carlos de Oliveira** (MAsc oT6) received the PEO Entrepreneurship Engineering Medal at the recent Ontario Professional Engineers Gala Awards Dinner.

At the recent Civil + Mineral Engineering Scholars and Donors reception student award winners had the opportunity to personally thank the sponsors of their scholarship awards. These scholarships are tremendously valuable to our students, reducing the financial burden of attending university and allowing them to focus on their studies and participate in enriching extra-curricular activities run by our student clubs. Our CSCE and CIM student chapters have been busy hosting speakers, and providing opportunities for networking with alumni and industry professionals at various events, including the Dining Etiquette Evening and the CIM Taste of Toronto. When not studying for midterms, our students are busy working on Concrete Canoe, Concrete Toboggan, and the Canadian Mining Games. A team of Mineral Engineering students also recently displayed their business savvy at the 2nd Annual National Mining Competition in Saskatoon.

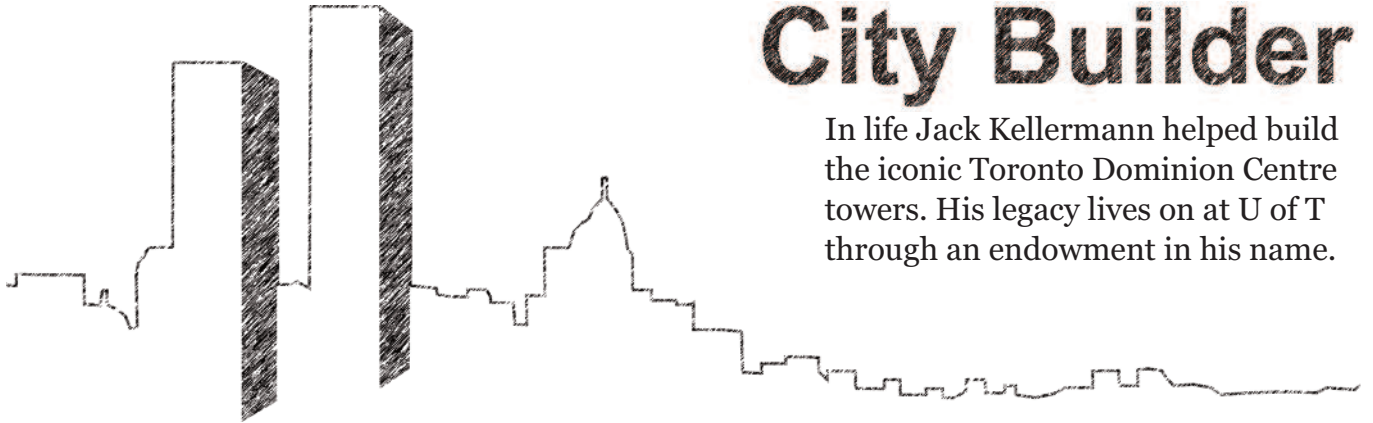
I look forward to seeing you at the annual CIV-GEO-MIN Alumni Dinner on February 7. I am excited to announce that the dinner will be preceded by a lecture from **Professor David Orr**, Distinguished Professor of Environmental Studies and Politics from Oberlin College.

Best wishes for the holiday season.

Brent Sleep
Professor & Chair
Department of Civil Engineering

City Builder

In life Jack Kellermann helped build the iconic Toronto Dominion Centre towers. His legacy lives on at U of T through an endowment in his name.



Our father, **John Louis (Jack) Kellermann**, died in August 1965 of cancer. He was 54 years old in the midst of a successful and productive career.

He attended Central Technical School in Toronto, where he studied drafting, graduating in 1928. He became a civil engineer by passing the exams in spite of not having attended university.

His family could not afford to send him, and in those days one could try the exams without having a degree in the field. He learned engineering with the help of a German immigrant engineer, a friend, who exchanged his knowledge of civil engineering for english lessons from our father.

The textbooks he used to study engineering were all in German. Unfortunately neither my brother nor I know who administered the exams. Perhaps someone at U of T knows under whose auspices these exams were given at the time.

Jack Kellermann started his professional career with McClintic-Marshall Co., of Potsdam Pennsylvania and Buffalo N.Y. In 1931 he joined Frankel Brothers Ltd., which at the time was in the scrap metal business. They hired him to do their first construction job and he was responsible for building their structural

steel business, which later became their primary operation.

The company was eventually renamed Frankel Steel Construction Ltd. In 1953 he became managing director of the steel division, and he went on to become general manager of the firm in 1961. Eventually Frankel Steel became Frankel Structural Steel Limited and Jack was named President.

By this time it was one of the biggest steel construction firms in Canada.

He oversaw the construction of the 56 story, 223m high Toronto Dominion Centre, the tallest building in the Commonwealth at that time. This was a project of which he was very proud but he did not live to see its completion.

During his career, he served as director of the Canadian Institute of Steel Construction for 20 years (he was named President in 1954), the Toronto Construction Association, and the Canadian Welding Bureau.

He was recognized as contributing groundbreaking ideas in the field of structural steel engineering.

His interests were very broad. He was self taught and knowledgeable in many realms, and was involved in the humanities, arts programs, music and politics.

A scholarship in Jack's name was created through the Canadian Institute of Steel Construction, who collected donations from friends after his passing.

In 1966, the J.L. Kellermann Graduate Fellowship was endowed at the University of Toronto.

We continue to honour the memory of Jack each year as we support the efforts of future civil engineers to realize their dreams to change the world.

Ruth Miller and Bob Kellermann TORONTO

Since 1992 alone, the fellowship in Mr. J.L. Kellermann's honour has supported 10 graduate students through their advanced engineering degree programs and distributed over \$38,000 in funding.

Through the vision of the Canadian Institute of Steel Construction, the Kellermann family, and all the generous donors to this fund, Jack's enthusiasm for the field of structural engineering lives on.

STAY IN TOUCH! We welcome your letters, stories, and updates sent to cd.anderson@utoronto.ca. We respond to everything you send and will publish what we can.

Photo: Samah El-Tantawy and son Yusuf receive her first-place IEEE ITSS award for best PhD dissertation from Prof. Christoph Stiller, IEEE ITSS President and Prof. Jason Geng, IEEE ITSS Vice President of Membership.



Her Light's Got Game

SAMAH EL-TANTAWY HONOURED FOR RESEARCH ON SMART TRAFFIC LIGHTS

U of T Civil Engineering graduate **Samah El-Tantawy's** PhD dissertation on developing a smart traffic light control system has won two prestigious international awards.

El-Tantawy's system uses game theory and artificial intelligence to 'teach' lights in real time how to adjust to traffic patterns.

Her dissertation won first place this month in the best PhD dissertation competition from the Institute of Electrical and Electronics Engineers (IEEE) Intelligent Transportation Systems Society (ITSS). El-Tantawy (PhD 1T2) also won second place from The Institute of Operations Research and Management Sciences (INFORMS) for its George B. Dantzig Dissertation Award.

"Everyone understands the impact of traffic congestion," said El-Tantawy, who was inspired by watching snarled traffic in Toronto and in her hometown of Cairo, Egypt. "It affects the environment, the economy and society in general."

Existing traffic light systems use sensors embedded in the pavement leading up to the intersection to send data to and from a central management centre. The centre then sends signals back to adjust the lights' timing.

El-Tantawy's system processes data on-site and in real-time, avoiding data-transmission delays. It also avoids the system-

wide chaos that would result if the central management centre broke down. This has huge implications for the future resilience of our critical infrastructure.

In addition, current systems monitor traffic patterns along a single road – either east/west or north/south. El-Tantawy's system lets traffic lights use data from all directions, creating more responsive timing for grid-like transportation networks.

It even allows lights to 'talk' to each other to create the optimum traffic flow in a given geographical area.

El-Tantawy, who worked under the supervision of **Professor Baher Abdulhai**, Director of The Toronto Intelligent Transportation Systems Centre and Testbed, has high praise for her supervisor's role in helping her win the awards.

"He has the critical thinking skills that made me think outside of the box," she said. "But he was not only supportive on technical matters; he also encouraged me through his positive energy."

"I offer my heartfelt congratulations to Samah El-Tantawy for being recognized for her innovative PhD dissertation," said Cristina Amon, Dean, Faculty of Applied Science & Engineering. "Her development of the smart traffic light control system is an excellent example of the creativity and global leadership of U of T Engineers."

Professor Abdulhai and Dr. El-Tantawy have made headlines for developing the system for which she won the awards. It is known as MARLIN-ATSC, for Multi-agent Reinforcement Learning for Integrated Network of Adaptive Traffic Signal Controllers.

Tests of the MARLIN system on 60 downtown Toronto intersections at rush hour showed a reduction in delays of up to 40 per cent. The test also showed MARLIN cut travel times by as much as 26 per cent.

"Samah's PhD is simply impressive, a role model for all PhD students," said Professor Abdulhai. "I am certainly proud of her achievements, and I hope my whole team follows suit."

The U of T Engineering system, which costs between \$20,000 and \$40,000 per intersection to install, has attracted interest from the traffic signal control industry, says El-Tantawy.

If all goes well, she hopes her next step will be to help implement the technology in the field. One day soon, you might just drive through an intersection equipped with her invention. We can certainly all name an intersection or two that could use it.

Peak Trash

Why The Solid Waste Problem is More Urgent Than We Think

In a commentary published in the October 30th edition of the journal *Nature*, Civil Engineering **Professor Chris Kennedy** and colleagues warn garbage is being generated faster than other environmental pollutants, including greenhouse gases.

The researchers say that 'business-as-usual' projections, based on population growth and gross domestic product (GDP), will see us generate more than six million tonnes of solid-waste a day by 2025. That's enough to fill a line of garbage trucks 5,000 kilometres long every day.

"This means greater numbers of people having to live in environments that are degraded due to the effects of trash," said Kennedy.

Kennedy wrote the commentary along with lead author **Daniel Hoornweg**, associate professor of energy systems at the University of Ontario Institute of Technology in Oshawa and Perinaz Bhada-Tata, a solid-waste consultant in Dubai, United Arab Emirates.

"Waste doesn't get on the map in terms of threats to our planetary system in the way greenhouse gases and ozone do," said Kennedy.

But the problem isn't just the waste itself, he added, but also the energy and resources required to make the products we throw out.

And as he and his co-authors point out, population is the main reason we generate so much waste. In 1900, the world had 220 million urban residents and produced fewer than 300,000 tonnes of solid waste (such as broken household items, ash, food waste and packaging) per day.

By 2000, the 2.9 billion people living in cities were creating more than three million tonnes of solid waste every day.

The researchers also found that some countries generate more waste than others. Japan, for example, produces roughly one-third less garbage per person than the United States. This is despite the fact they have approximately the

same GDP per capita.

The reason, the authors say, is Japan's higher-density living, higher prices for a larger share of imports and cultural norms.

According to Kennedy, we need to act on two fronts – population growth and waste management – if we hope to curb our garbage production and address this growing challenge.

"Population is the ultimate driver here, and vulnerable, poor people tend to multiply faster," he said. "So anything you can do to help urban poor, to give them more security, health and education, will stop the global population from growing so high."

To better manage wastes, society needs to accelerate the adoption of practices of 'industrial ecology' – developing urban and industrial systems that conserve mass akin to natural ecosystems. A great example is the city of Kawasaki in Japan, where firms are linked into an industrial ecosystem.

'Peak trash' – the year when garbage production is expected to reach a maximum – depends on how well we learn to curb our waste.

Kennedy and his co-authors write that richer North American and European cities could see peak trash by 2050 and Asia-Pacific countries by 2075. But they say waste will continue to rise in the fast-growing cities of sub-Saharan Africa.

"The urbanization trajectory of Africa will be the main determinant of the date and intensity of global peak waste," they write.

"With lower populations, denser, more resource-efficient cities and less consumption (along with higher affluence), the peak could come forward to 2075 and reduce in intensity by more than 25%. This would save around 2.6 million tonnes per day."

Photo: Prof. Chris Kennedy in the Centre for Civil Informatics with his newest book, the Evolution of Great World Cities.



Over the past year, Kennedy has conducted work in Beijing, Paris, Rome, and of course, Toronto. His environmental work on green design, greenhouse gas emissions, and energy conservation sees our local issues on a global scale in the complex overlay of economic and environmental issues.

He has collaborated with the World Bank and the United Nations. His work has had an impact on local and international policies, such as incentives for electric cars in Ontario.

Seconded recently to the Organization for Economic Cooperation and Development in Paris, Kennedy helped that group improve infrastructure around the world.

His new project is with Enel, an Italian utility company, to study the urban metabolism energy flows of megacities (those with a population of over ten million).

Author of *The Evolution of Great World Cities* (2011), Kennedy is currently beginning a new book project in the midst of his global research and work.

The work will examine the competing perspectives of society's development and how these figure into recent discussions of where the world is heading in the wake of global environmental epidemics.

According to a Malthusian conception, one sees war and famine keeping a population explosion in check. On the other hand, a liberal, free market approach sees human innovation as a method to avoid crisis.

Kennedy's aim is to reconcile these two outlooks as he examines the environmental turmoil we are dealing with today, a problem he is attempting to help resolve through collaboration.

Concrete Exemplar

PROFESSOR DOUG HOOTON RECEIVES ROBERT E. PHILLEO AWARD

U of T Engineering **Professor Doug Hooton** (CivE 7T4, MAsc 7T5) is the 2013 Robert E. Philleo Award winner from the American Concrete Institute (ACI).

The award, given by the ACI Foundation Concrete Research Council, honours exemplary teaching, research and service to the profession in the areas of durability of concrete, properties of concrete-making materials and preparation of standards and specifications.

"We are delighted Professor Hooton has been recognized for his outstanding contributions to the integrity of our physical infrastructure," said **Cristina Amon**, Dean, Faculty of Applied Science & Engineering. "He is an exceptional leader in improving standards in this field."

The Department of Civil Engineering professor is one of the country's top experts in the durability and sustainability of cement and concrete. He has worked for years with industry and government to improve the design, construction and repair of concrete structures.

Hooton, who is currently serving as NSERC/CAC Industrial Research Chair in Concrete Durability and Sustainability, received his award on October 20 at the council's annual convention in Phoenix.

Hooton also recently received the Frank E. Richart Award, presented by the American Society for Testing and Materials (ASTM) and was inducted as a 2013 Fellow in the Canadian Academy of Engineering (CAE).

Photo: Mehmetcan Ersoz stands next to the reinforced concrete formwork and membrane system that he and his team helped install in the Istanbul subway.

A Summer in Istanbul

OUR PROGRAMS TAKE STUDENTS ALL AROUND THE GLOBE, AND SOMETIMES DEEP WITHIN IT. MEHMETCAN ERSOZ GAINED HIS EXPERIENCE UNDERNEATH ONE OF THE WORLD'S BIGGEST CITIES

Mehmetcan Ersoz (CivE 1T4) spent this last summer fulfilling his Professional Experience Hours, a mandatory part of our undergraduate curriculum, deep underneath the streets of Istanbul, Turkey.

The municipality that spans two continents and is home to almost 14 million people is rapidly expanding its network of underground rapid transit, with 62 stations in service and another 23 under construction.

Mehmetcan got to work on this exciting civil project, and he reflects on his time abroad.

Who did you work for?

As an undergraduate civil engineer I worked in the Istanbul Subway Construction Project for seven weeks with Soner, an engineering firm responsible for constructing Akmerkez Station and the connection tunnels. Each tunnel is located approximately 40 metres underground.

What did you do on the team?

The first five weeks were all about excavation. The tunnel was opened using the New Austrian Tunneling Method (NATM), a technology that involves engineering the tunnel as we go in a way that it can carry its own weight by taking advantage of the geological strength of the surrounding rock mass.



The construction process starts with a jackhammer, which breaks the hard surface. Shotcrete is then applied on the surface of the excavation and the required number of bolts are driven in so that the tunnel is connected to the main land layer. Bolts are required to carry the tunnel by applying tension.

Our team completed about 100 metres of tunnel excavation in five weeks.

How did you finish off your placement?

The last two weeks were spent starting the membrane covering and invert concrete formations. I worked as the head engineer of the membrane team while covering the tunnels.

Membrane is necessary in tunnels so that water does not enter inside the tunnel.

When I had time away from membrane covering, I worked with the concrete team and helped them form the invert.

R. Mohan Srivastava Wins CBC Canada Writes Competition

Lassonde Mineral Engineering Program instructor R. Mohan Srivastava has won the grand prize in the recent CBC Canada Writes literary contest in the Creative Nonfiction category.

Srivastava, a geostatistical consultant with more than 30 years of experience in practice and instructor for MIN401H1 - Mineral Reserve and Mineral Resource Estimation, won the national contest for his work, *The Gods of Scrabble*.

His work was selected as the grand prize winner from over 2700 entries.

"Writing a short work of creative

nonfiction is a difficult task—reflection, telling detail, compelling events and memorable characters must fit into a very small space," judges Ross King, JJ Lee, and Jan Wong said. "When it works, however, it is a rewarding read."

"Like the clacking tiles shifting on each player's rack, the author sorts through languages and racial, gender, and age stereotypes," they said.

Lassonde Students Go West

OLEG SHTEYNER (MINE 1T4+PEY) ON HIS FIRST FORAY INTO THE NATIONAL MINING COMPETITION AND LESSONS LEARNED

At the beginning of the September 2013 academic year, **Andreas Steckenborn** (MinE 1T4), my class colleague and the president of the Mineral Engineering Club at the University of Toronto, asked me to create a team to represent our university in the National Mining Competition (NMC).

The competition took place in Saskatoon, Saskatchewan, from October 31st to November 3rd. Founded in 2012, the NMC is Saskatchewan and Canada's first undergraduate mining case competition.

This year, 14 teams from 12 universities across Canada and USA were challenged to solve an innovative mining strategy case relevant to business issues facing firms within the global mining sector.

I was surprised to learn that none of my classmates had heard about this great opportunity. Although it was less than two months before the event was scheduled to start, I decided to take the initiative and build a team of four members.

Getting the team together was a challenging task.

I had been away for a year on my internship with Lake Shore Gold, and I personally did not know the lower year students well. In addition, I did not have the money to pay for the expensive participation fee and flight tickets, but I was determined to succeed and with encouragement from class colleagues and professors I began recruiting.

Within a week I assembled an excellent team which included **Matthew Dolowy-Busch** (MinE 1T4), **Thomas Bamford** (MinE 1T4+PEY) and **Jonathan Adomait** (MinE 1T4), all Lassonde Mineral Engineering Program students. Once the final team was assembled, we began an aggressive fund raising campaign.

We had less than a month left and I was worried that due to tough market conditions in the mining industry, we would not be able to find sponsors. However, hard work and determination paid off and we were able to gather the required \$3,000 in just two weeks.

Our rigorous efforts paid off!

None of us had ever participated in business case



competitions and we did not know what to expect. However, after establishing our team values and goals we were determined to push our limits and work hard to achieve success.

With less than 3 weeks to go, we decided that on top of our regular school work load we would run a number of practice sessions to simulate a business case competition. It definitely paid off.

Teresa Miniaci, Assistant with the Lassonde Mineral Engineering Program, got us in contact with **Jason Chang**, the Director of Foundation & Corporate Partnerships at the Faculty of Applied Science & Engineering. Jason met our team at one of our practice sessions and gave us advice that proved to be critical for the success the team.

The case this year focused heavily on the technical engineering analysis of mine project development and financing.

The team was presented with three hypothetical gold projects in Nunavut and we were told to choose the most viable one for a company to develop, if any.

We had 36 hours to complete the case before submitting our presentation.

We spent many hours researching our case and practicing our presentation. Those sleepless nights definitely contributed to our team's bonding experiences.

The final presentations mimicked presenting to the majority shareholders of the company in question. >>

Student News

Photo: Lassonde Mineral Engineering students gather in safety gear near the top of the St Andrew Goldfields open pit mine near Kirkland Lake.

Our engineering instincts told us that none of the projects were actually economically viable but we ignored them on the basis we thought we had to sell an idea to be successful in a business competition.

We were wrong, as were many other teams.

In retrospect, we should have told the hypothetical company that all projects ought to be sold off or put on hold, as the winning team noted.

Despite the fact that our team did not win the competition, we were able to produce an excellent presentation. All of us have dedicated tremendous effort into our case study recommendation and I am very proud of our work.

The winning team did an outstanding presentation and they definitely deserved the first place, as noted by the rest of the delegates.

The whole weekend was a great opportunity to meet future industry leaders, as well as gain technical experience and knowledge through current industry professionals. Overall it was a great experience to learn how to develop an economic feasibility study and present it in an environment that resembled CBC's "Dragon's Den."

The practice sessions definitely helped in our case development as we all got to know each other comfortably enough to work as a high performance team with tight deadlines and working spaces. With this being said, we still got some relaxing time to network with other delegates and build important connections.

The competition was entirely organized by the undergraduate business students from the Edwards School of Business in the University of Saskatchewan. The organizing committee did a phenomenal job in creating a challenging and an intellectually stimulating competition in an exceptionally professional environment.

It was a tremendous honour getting to know the future leaders of the mining industry.

My team and I had a great time and we picked up many important lessons and industry contacts. Matthew and Thomas, who are both in the third year of their bachelor's degree, have committed to lead the next U of T team in 2014 and they already began a recruitment campaign.

Finally, I would like to thank our amazing sponsors: CIM Toronto Branch, the Department of Civil Engineering at U of T, Barrick Gold, Lake Shore Gold and our dear Professor Edward T.C. Spooner. Thank you so much for your support. Without your help we would never have made it.



... And They Go North!

ANNUAL FIELD TRIP TO KIRKLAND LAKE HOSTED BY ST ANDREW GOLDFIELDS LTD

The second year Lassonde Mineral Engineering students travelled to Kirkland Lake for their annual field trip to visit an operating mine. St Andrew Goldfields Ltd. volunteered to host and provide tours for our class of 34 students.

The students started their day bright and early, arriving at the Holt and Holloway Mines by 7:00 am to prepare for their underground mine tour. Two thirds of the class descended underground at the Holt Mine and the remaining students descended the Holloway Mine.

After spending 4 hours underground, the students had lunch at the Holt Mine and were given a presentation on the operations of St Andrew Goldfields by a past graduate of the Lassonde Mineral Engineering Program, **Filip Medinac** (MinE 1T2).

After lunch, the students were given guided tours of the Holt Mill then they boarded a bus and drove to the Hislop Mine where they were given a tour of SAS's Open Pit Mine.

For the majority of the students, this was the first time that they visited a working underground and open pit mine.

Thanks to all the engineers and geologists at St Andrew Goldfields for taking time out of their busy schedule to host the Lassonde Mineral Engineering students.

Photo: A wide angle view of our tour group shows the scale of the operations at the St Andrew Goldfields open pit site.

Our Energetic Earth: A Massive, Open, Online Course

Ever wonder about the forces of nature, how they work and how life manages to survive amongst these forces on a little blue planet lost in space?

Professor **Bryan Karney** from Civil Engineering and Engineering's Cross-Disciplinary Programs Office has launched the department's first Massive Open Online Course (MOOC), a free, multimedia online course open to anyone who is interested.

Our Energetic Earth explores the dynamics of the planet. It covers topics as diverse as what causes wind and the ocean currents, to what drives

thunderstorms and how energy from sunlight is converted to thermal energy.

It also addresses why, in the cold vastness of space, Earth's surface is able to support life. Course content will give students a better sense of the complexity, challenges and wonder of living on such an energetic planet.

A MOOC allows for the participation of large numbers of people in non-credited courses.

It includes videos, reading material, problem sets and interactive forums which include both students and instructors.

Anyone can enrol.

"A few years back, we created a course that covered energy and thermodynamics. Instead of being about

exploiting sources, it looked at the energy that is around us as part of a dynamic Earth," Karney said. "We looked at understanding the forces behind hurricanes, tsunamis and more. The first year, the course attracted 35 students, but within five years that number jumped to 550. There is a huge interest in this topic."

Students will become part of the discussion about renewable energy and sustainability, and this course gives them a 'big picture' view. This gives them something that's applicable to the world and not just machines.

Often we stop noticing some of the extraordinary things going on around us – in a windstorm, the flash of lightning or when the ocean waves are crashing. What happens around us is amazing, and it's even more special if we understand the causes.

Going underground, visiting the mill and open pit mine allowed the students to connect what they have been taught in the classroom to real life applications.

The evening after our long day at the mine, the geologists and mine engineers made themselves available at the local Kirkland Lake bar for any students who wanted to speak to them further – almost the entire class showed up.

Visit edx.org

to enroll in Our Energetic Earth and other Massive, Open, Online Courses at leading institutions worldwide.



Civil and Mineral Scholars Honoured at Reception

OUR ANNUAL EVENT ALLOWS STUDENTS
A UNIQUE OPPORTUNITY TO THANK THE
DONORS OF THEIR AWARDS IN PERSON

It's the personal connection between scholar and donor that adds tremendous value to all our awards.

On one special evening earlier this fall the Galbraith Building was full of happy students and proud family members and friends.

We were thrilled to be able to host our scholarship donors and their recipients for a special thank you event once again. While a note or card is a touching way to say thank you to someone who has given much, we find that the kind of personal connection created between donor and recipient is simply irreplaceable.

It adds to the value of an award tremendously – the student is able to catch some of the inspiration that prompted the gift, and the donor is able to see before them the immeasurable ways in which their gift has helped a whole slate of others realize their dreams.

Remarks for the night included those from **Mr. Michael Doherty** (CivE oT2), who spoke on behalf of his family on the reasons they give back and their passion for engineering education.

Suchit Chanana (CivE 1T4) then spoke on behalf of all the students, offering his thanks for the generosity and investment in the future that each gift represents.

It left the crowd sure that the same passion which drives the donation of an award is carried forward in the work students carry out through its assistance.

In that way, the award not only helps the recipient directly, it also funds the creation of new engineering technology which potentially impacts the lives of people around the world.

It was a privilege to be able to match our donors with their recipients, and to see the spirit of discovery passed on between generations of engineers.

Over 50 undergraduate and graduate students at all levels were recipients of donated awards in the last year. Photos taken at this year's event are available on our website.



Photos Clockwise from Left: Prof. Brent Sleep, Chair, Department of Civil Engineering, addresses the crowd of students, parents, donors and friends of the department at the annual Civil + Mineral Scholars and Donors Reception.

Eva Barnard (CivE 1T4) with Inspec-Sol Scholarship donor and alumnus Renato Pasqualoni (GeoE 8T7).

Prof. Emeritus Richard Soberman, representing the Richard Soberman Graduate Fellowship and Landy Cheung (EngSci 1T2, MASc Candidate), recipient.

The group of scholars from the Civil Engineering and Lassonde Mineral Engineering Programs with the donors of their awards.

Margaret Kende (CivE 6T0) with the recipient of her award, Christina Ismailos (CivE 1T6)

Visit [flickr.com/photos/civmin](https://www.flickr.com/photos/civmin)
to view our full collection of photos
from this and other events.



Awards and Honours

Samantha Espley (GeoE 8T8) ENGINEERING ALUMNI ASSOCIATION 2T5 MID-CAREER ACHIEVEMENT AWARD

The 2T5 Mid-career Achievement Award honours a member of the U of T Engineering class celebrating 25 years since graduation.

This award recognizes a graduate who has earned respect within the profession and broader community, attained significant achievement and exhibits promise of further contributions.

Samantha has moved from Mining Research Engineer in 1990 to General Manager of the Mines and Mills Technical Services Department of Vale Limited.

Her current responsibilities include the provision of technical services and support to six underground mining operations, a milling concentrator as well as a matte processing facility.

She is accountable for brownfield exploration, geology interpretation and mineral resources inventory reporting for the Sudbury operations. In her current role, Samantha oversees a large group of mining and metallurgical engineers, technologists, geologists, and associated staff.

Samantha has published and presented over 60 papers, reports and publications since graduation, addressing topics ranging from underground data collection to the role of women in the underground hard rock mining industry.

Samantha is a founding member of Women in Science and Engineering (WISE) and has also served on boards and held leadership roles with WISE, the Canadian Institute of Mining and Metallurgy (CIM), Professional Engineers of

Photos: Samantha Espley, Engineering Alumni Awards Dinner, Anna Dunets Wills, Engineering Hall of Distinction Induction Ceremony, Andy Kikites, Arbour Awards Reception.

SELECTED ACHIEVEMENTS

- >> Trailblazer Award, Women in Mining Canada, 2013
- >> Co-Chair, Underground Working Group of the Global Mining Standards and Guidelines Committee, 2012–present
- >> Director, Bharti School of Engineering, Laurentian University, 2012–present
- >> Distinguished Service Medal, CIM, 2009
- >> Chair, CIM Sudbury Branch, 2007–2009
- >> International Women’s Week Award, 2004
- >> Board of Directors, Member, Science North, Sudbury, 2003–2008
- >> Chair, Science Committee, Science North, Sudbury, 2003–2008
- >> Governor General’s Gold Medal, Laurentian University, 1999
- >> Founding member, WISE, 1998

Ontario (PEO) and the Canadian Mining Research Network (CAMIRO).

She has been the keynote speaker three times for the province-wide university initiative Go Eng Girl, as well as giving the keynote address at the WISE Gearing Up sessions for older high school students.



Anna Dunets Wills (CivE 7T6)

ENGINEERING ALUMNI ASSOCIATION HALL OF DISTINCTION INDUCTEE

The Hall of Distinction is an assembly of extraordinary alumni, selected for membership by their peers for their lifelong accomplishments. These are graduates whose performances have ultimately defined what is most exemplary in our graduates and in our profession.

The careers of the members stand as examples and add a sense of reality to the aspirations of successive generations of U of T Engineering students. Located in the Sandford Fleming Building, the Hall of Distinction is a familiar daily presence in the lives of students and is often visited by alumni and their families.

For Anna, civil engineering has always been a calling that gives her an opportunity to help solve problems where the need is great. It began when she was a U of T undergraduate and spent several summers building homes in remote First Nations communities in northern Alberta and British Columbia. It continued as she honed her civil engineering skills on projects in northern Manitoba and Lesotho, Africa.

In any of the infrastructure projects she takes on, Anna ensures the negotiations will result in work that truly meets local needs, respects cultural realities and is environmentally sustainable. Current projects — as a senior manager with planningAlliance — include resettlement plans near nickel deposits in Tanzania and a proposed dam in Lesotho.

Anna also uses her infrastructure expertise in a variety of volunteer activities. As part of a medical team working in Uganda, she has been concentrating on water, sanitation and related upgrades for a new clinic and maternity ward.

The Faculty's Gull Lake Survey Camp benefited from her generous advice and student mentorship during the creation of a sustainable wastewater treatment system. Anna has also been active with the North South Partnership for Children, which links professionals in southern Ontario with First Nations communities in the province's northeast.



SELECTED ACHIEVEMENTS

- >> **Meritorious Service Award, Engineers Canada, 2012**
- >> **Citizenship Award, Professional Engineers of Ontario, 2011**
- >> **Advisor, U of T team, Reinvent the Toilet Challenge, 2011–2012**
- >> **Member, Housing Economic Development & Infrastructure subcommittee, North South Partnership for Children**
- >> **Volunteer, EMAS Canada (Education, Medical Aid & Service)**
- >> **Presenter, ASCE Conference on Cold Regions Engineering, 1989**

Andy Kikites (CivE 0T2)

ARBOR AWARD

The Arbor Awards were created by the University of Toronto in 1989 to recognize volunteers for outstanding personal service to the university.

Since then, the university has annually acknowledged the alumni and friends whose loyalty, dedication and generosity has added substantially to the quality of the University of Toronto experience for students, faculty, staff and alumni.

The University of Toronto has honoured ten alumni from the Faculty of Applied Science & Engineering with Arbor Awards. The awards recognize outstanding voluntary service to the university.

“On behalf of the Faculty of Applied Science & Engineering, I would like to extend my deepest gratitude to our many alumni and friends who offer their time and expertise to benefit our students and support our Faculty,” said Dean Cristina Amon. “We value their tremendous contributions and take great pride in the recognition they have received through the Arbor Awards.”

Andy has been an active volunteer with the Department of Civil Engineering since he graduated in 2002. He has participated in recruitment and Career Development events for prospective and current students. His recruitment efforts have helped connect Civil Engineering students and alumni with employment opportunities.

Awards and Honours

Paul Cadario (CivE 7T3, LLD 2013)

ENGINEERING ALUMNI MEDAL

First awarded in 1939, the Engineering Alumni Medal is the highest honour awarded by the Engineering Alumni Association.

High achievement is the common thread that links past recipients of this medal. In their diverse careers, these individuals have demonstrated superior accomplishments and have responded with flair and excellence to the challenges they have faced.

They are outstanding role models for U of T Engineering students.

Paul's 37-year career with the World Bank had a profound impact on ensuring the integrity of its mandate to foster international development.

He accomplished this as a development practitioner in Africa and East Asia, as an administrator of programs in the emerging countries of Eastern Europe and the former Soviet Union, and while overseeing the change and expansion of the World Bank's information systems and trust funds in an era of growing transparency and accountability in global development.



The demands of his international commitments didn't deter Paul in his extraordinary dedication to supporting U of T, where he graduated in Civil Engineering before pursuing further studies at Oxford University as a Rhodes Scholar.

One calculation estimates he has taken on 30 different roles as a volunteer over the last decade, even while based in another part of the world.

He currently chairs the Dean's Advisory Board, is a member of the Faculty's Boundless Campaign Executive and Civil Engineering Board of Advisors, and holds numerous other

volunteer leadership roles across the University.

He led the search committee that selected David Peterson as Chancellor, and was the president of the University of Toronto Alumni Association from 2007 to 2009. In 2012, Paul became a Distinguished Senior Fellow in Global Innovation, a joint appointment of the Faculty of Applied Science & Engineering and the Munk School of Global Affairs.

This is Paul's fourth award of distinction from the Engineering Alumni Association.

Honoris Causa HONOURARY DOCTORATE

An exemplar of global citizenship, University of Toronto alumnus **Paul Cadario** works tirelessly to reduce poverty and improve the living standards of people around the world. A Rhodes Scholar, he received a B.A. and M.A. in philosophy, politics and economics from the University of Oxford.

During his tenure at the World Bank, Dr. Cadario promoted development in Africa and Asia and oversaw the Bank's activities in central and Eastern Europe, and in the former Soviet Union.

Dr. Cadario shares his leadership and knowledge with the University as a Distinguished Senior Fellow in Global Innovation. A long-time member of the Dean's Advisory Board in the Faculty of Applied Science and Engineering, Dr. Cadario has been involved with the University of Toronto Alumni Association (UTAA), the University's international alumni community and Governing Council.

Through generous gifts to the Faculty of Applied Science and Engineering's Centre for Global Engineering and to the School of Public Policy and Governance, Dr. Cadario has enriched the lives of alumni, students and faculty members. For his outstanding service to the University, the University of Toronto is honoured to confer the degree of Doctor of Laws, honoris causa, upon Paul Cadario.

SELECTED ACHIEVEMENTS

- >> **Recognition, World Bank Young Professionals Program, World Bank Group, 2008**
- >> **Engineering Hall of Distinction, Engineering Alumni Association, U of T, 2007**
- >> **President, University of Toronto Alumni Association, 2007–2009**
- >> **Malcolm F. McGrath Alumni Achievement Award, Engineering Alumni Association, U of T, 2004**
- >> **Recognition, Office of Ethics and Business Conduct, World Bank, 2004**
- >> **2T5 Mid-career Award, Engineering Alumni Association, U of T, 1998**
- >> **Arbor Award, U of T, 1995**
- >> **Alumni member, Governing Council, U of T, 1985–1994**
- >> **Student member, Governing Council, U of T, 1972–1973**

In Memoriam

Photos: Top, Basil Haynes at Survey Camp Reunion, 2009.
Bottom, John Middleton and students at the Camp cookhouse.

Basil Haynes

ASSOCIATE PROFESSOR, MINE 4T4

Earlier this fall we lost one of our most energetic and steadfast supporters, **Professor Basil Haynes**. Bas passed away after a lengthy and courageous fight with prostate cancer at age 91.

Bas was a Professional Engineer and Ontario Land Surveyor, having graduated from the University of Toronto in Mining Engineering in 1944. He was invited to be a lecturer at the University in 1946 and he remained there until his retirement in 1987, having achieved the post of Associate Professor at the Department of Civil Engineering.

In addition to his teaching career, Bas worked as a land surveyor, operating his own business in Scarborough.

He loved the UofT annual survey camps at Dorset and Gull Lake because they combined his favourite pursuits - teaching, surveying, and roughing it in the bush.

Those of us that knew Bas quickly came to realize that retirement scarcely meant goodbye. Bas was a regular at many of our alumni and educational events and continued to support students through his own blend of humour and knowledge.

Bas loved telling the stories of his glory days at camp amongst the students, and his eyes would light up when detailing the shenanigans at the Rockcliffe and Deer Lodge.

We will remember Bas fondly. His benevolent influence on countless students will always be felt amongst the trees and hills at camp.



John Middleton

SURVEY CAMP CHEF

We are deeply saddened to pass along the news that **John Middleton's** 16 month struggle with cancer ended on September 13, 2013. John passed away at his home with his 4-legged friend, Diesel, nearby.

Some of John's happiest moments were spent up at Camp. John saw going to Camp as hard work, but he also saw it as a vacation as well.

When cooking in the kitchen overlooking the waters of Gull Lake, John found great peace. He yearned to be back at Camp this past summer, but sadly, that wasn't to be.

Alumni and staff of Survey Camp will remember John's wit, friendship, and amazing home cooking over many years.

John loved working in more remote places. His favourite pastimes, including cooking, fishing, and cards, were a natural fit at Gull Lake.

As they used to say in the lumber Camps of days past, "John has left us for awhile." A sad but comforting thought.



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Thursday, January 9, 2014
10:00am - 2:00pm
Lobby, Medical Sciences Building
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Companies: See back cover to register.
Space is limited - register today!

Coming Events

CSCE Civil + Mineral Engineering Career Fair

Thursday, January 9th 2014

Lobby, Medical Sciences Building
10:00 a.m. - 2:00 p.m.

Company registration:
www.civil.engineering.utoronto.ca

CIV-GEO-MIN Alumni Dinner 2014

Friday, February 7th 2014

Faculty Club, University of Toronto
6:30 p.m. Reception, 7:40 p.m. Dinner

Ticket sales and registration:
www.civil.engineering.utoronto.ca/alumni

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