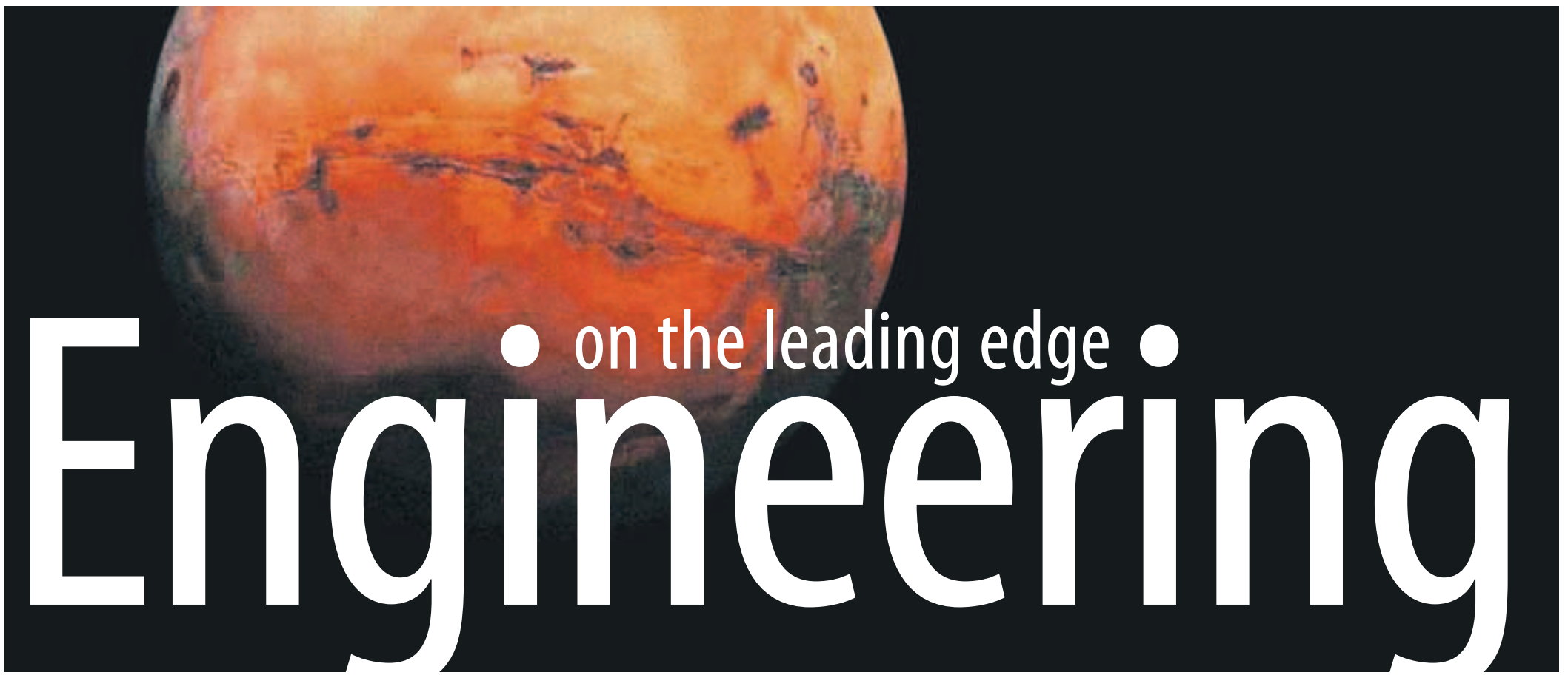


• on the leading edge • Engineering

Exploring the Red Planet

The Phoenix Mars Lander's work is done. It now sits dormant in the far north of Mars' Vastitas Borealis region.

Performing breakthrough science far beyond its planned 90 days in the hostile environment of the Red Planet, the lander went to work on May 25, 2008, and last phoned home on November 2.

Set to be published early this spring, the discoveries made by the Phoenix on its ground-breaking trek will direct our future exploration and understanding of Mars.

Canadian engineers from the public, private and academic sectors played a pivotal role in our country's immense contribution to the tools and capabilities of the Phoenix Mars Lander. The Canadian Space Agency, York University and MDA Space Missions – in partnership with Optech Inc. – provided engineers whose leadership roles gave birth to the Phoenix's weather station.

The weather station provided daily weather reports, including the measurements of temperature and pressure, dust, clouds and fog in the lower atmosphere.

Most significantly, the weather station's lidar instrument confirmed that it snows on Mars, having detected water ice crystals falling from the clouds above the robot's landing site.

"It was quite fitting to be a part of a Canadian instrument that saw it snowing on Mars," says Mike Daly, P.Eng., staff engineer at MDA who was Canada's first participant on the Phoenix Mars Mission – helping to negotiate Canada's role. "That discovery was somehow Canadian."

He says it is the presence and dynamics of water on Mars that is important in understanding the past and present state of the planet. "It's going to help target the next level of exploration on Mars. We'll be able to maximize our opportunity for discovery by better understanding where we should go to discover past or present life; water being the key to life."

Scientists at York University, led by Space Engineering professor Jim Whiteway, P.Eng., decided on the required functions and performance of the weather station. Then, MDA and its partners designed and built the equipment.

"Our role was to provide the conceptual design, what type of laser detectors, etc., to achieve the science goals, then industry worked out the details," says Dr. Whiteway, who adds that York's academic leaders and students, as well as team members from the University of Alberta and Dalhousie University, were involved right from design to operating the equipment on Mars.

This self portrait of NASA's Phoenix Mars Lander is a vertical projection that combines hundreds of exposures taken by the Surface Stereo Imager camera on the lander.

PHOTO: NASA/JPL-CALTECH/UNIVERSITY ARIZONA/TEXAS A&M UNIVERSITY

Isabelle Tremblay, Eng., was the lead systems engineer on the weather station at the Canadian Space Agency. "I helped translate the needs of the scientists into the technical requirements of the meteorological system," she says. "We relied on solar energy to operate on Mars and had to design the instruments to use very little energy."

The pressure and temperature sensors used less than five watts of power and the lidar used no more than 30 watts in order to function. "That's very low," she says. "If we think of a 100-watt light bulb, we had less than half of that for our station."

Ms. Tremblay says advances such as these have applications on other planets than Mars; namely Earth. "When we explore space, we are learning to use fewer resources."

According to Michael Monette, P.Eng., president of the Ontario Society of Professional Engineers (OSPE), along with innovation in materials research and computer modelling, such engineering excellence has other benefits as well.

"Ontario and its engineers have been at a leadership level in robotics, simulation and related training programs that support space exploration," he says. "This has been the case because Ontario is well supported by a very significant university and college system."

Canada's first internationally renowned role in space exploration came from its contribution of Canadarm, followed by Canadarm2 and Dextre on the International Space Station.

Dr. Daly, who was involved in that project as well, says Canada has an unrivalled position, internationally, in the area of Human Space Robotics. "All of the major robotics systems that are counted on in the shuttle and the space station are Canadian." ■

Chris Hadfield

Educational path leads to spacewalk

Not many of us can say we've been on Royal Canadian Mint silver and gold coins. But, then again, not many of us are Chris Hadfield – Canadian astronaut, mechanical engineer and first Canadian to take a walk in space.

Mr. Hadfield describes his 2001 spacewalk to install Canadarm2 on the International Space Station as being "like a miracle.

"The combination of holding that huge, beautiful engineering creation in one hand with the rest of the universe unfolding around you on the other side is magnificent," he says.

Having grown up on a corn farm in Milton, Ontario, Mr. Hadfield says his engineering education and post-graduate work were essential in the lead-up to becoming an astronaut.

One of four Canadian astronauts chosen from a field of 5,330 applicants in 1992, he says good things don't come easy.

"It is important to have a long-term goal in mind, and get yourself as much education and experience as possible, so that you'll have gained enough knowledge and practical

See ASTRONAUT page NEWOSC2

Careers

Women in space engineering

The Canadian Space Agency is home to some dynamic engineering professionals, who also happen to be women.

Isabelle Tremblay, Eng., has worked at the Canadian Space Agency (CSA) since she started there as a student of Aerospace Engineering specializing in Space Technologies in 1997. From her first position as a robotics engineer, to her current role as a systems engineer, Ms. Tremblay says being in a female minority has never been on her radar.

"I've never felt it was a man's world. It was always very natural for me," she says. "People remind me all the time about the few women in engineering, but, stereotypes aside, there is certainly a place for women to be happy in the engineering field."

For Ms. Tremblay – who was lead systems engineer on the meteorological system that went to Mars on the Phoenix Mission – gender gets set aside in favour of recognizing individuals for their work and abilities. "All along, during my studies and while I've been working, for me a role model could be a man or a woman. I could identify myself to the person, regardless."

See WOMEN page NEWOSC2

From Mars to MaRS

Taking engineering innovation to the world

Canadian engineering companies such as SPAR Aerospace Inc., whose robotics division is now owned by MacDonald Dettwiler and Associates Ltd. (MDA), was a key player in the creation of Canadarm. MDA also played a role in the Phoenix Mars Mission, building the weather station for the Phoenix Lander.

Such role-model engineering organizations now serve as an inspiration to other up-and-coming engineering innovators.

When inspiration isn't enough, there's the MaRS Centre, a non-profit innovation hub based in the heart of Toronto's Discovery District. Since 2006, MaRS has provided business advisory services to over 800 entrepreneurs, Ontario-wide.

According to MaRS advisor Krista Jones, who works with high-potential companies to build their businesses, 30 to 40 per cent of MaRS clients are engineering-based companies.

"We help emerging start-up and entrepreneurial companies commercialize promising innovations," says Ms. Jones. "And we do that in various ways, connecting our clients to knowledge, capital and talent."

One such client is Oakville-based Phybridge Inc., whose UniPhyer product provides a parallel voice network that allows companies to adopt Voice over Internet Protocol (VoIP) without converging their voice networks onto their data networks.

"The UniPhyer plug-and-play solution leverages existing phone wiring to provide a parallel voice network," says company CEO John Croce.

He says working with a MaRS advisor helped Phybridge connect with potential telecommunications partners and tap into proven telecommunications expertise to hire Phybridge's executive vice president.

Echologics Engineering Inc. is also under MaRS advisement. Echologics manufactures and sells leak detection equipment to municipalities and service providers around the world, helping them find leaks in their water distribution piping. As well, the company's acoustic- and vibration-based technology analyzes the wall thickness of underground water pipes, so their current state of repair can be better understood.

Marc Bracken, president and CEO of Echologics, says MaRS offered the company the support it needed to tackle the marketing and sales aspect of the business. "To ensure that this technology doesn't just die in a small Canadian company has required their vision," he says. ■

From page NEWOSC1

Astronaut

expertise that you will have put yourself in a position to do well at what you love."

In his case, Mr. Hadfield says his love is engineering; understanding how things work and how they might work better.

This, along with his extensive training as a pilot, has allowed him to get to know the mechanical workings of and fly over 70 different aircraft.

"The most complicated vehicle ever built is the space shuttle. In order to fly it, we really need to understand the nuts and bolts of how it works. My background in mechanical engineering was an absolute prerequisite," he says.

Canadian Space Agency astronaut Chris Hadfield stands on Canadarm to work with Canadarm2, the newest addition to the International Space Station. PHOTO: CANADIAN SPACE AGENCY

Having held positions with NASA such as director of operations at the cosmonaut training centre in Star City, Russia, as well as chief of Robotics for the NASA Astronaut Office at the Johnson Space Center in Houston, Texas, Mr. Hadfield is currently back in Star City training as astronaut Bob Thirsk's backup to live on the space station for six months.

Mr. Hadfield says lifelong learning is essential. "If you stop learning, you stop growing," he says. "I'm still in school."

Mr. Hadfield says if he doesn't go in place of Mr. Thirsk this time, he hopes the next time a Canadian goes to live on the space station for six months, his extensive training will be used then.

"I've visited space, but I haven't made it my postal code," he says. "That would be a fascinating human adventure, as well as a big engineering challenge." ■

From page NEWOSC1

Women engineers

One of about 30 women working as engineers at the CSA, with about 170 male counterparts, Ms. Tremblay says, "The numbers reach a ceiling at around 20 per cent in most engineering environments, depending on the field."

While the overall enrolment of women in undergraduate university programs now outnumbers males three to two, Angela Shama, P.Eng., CEO of the Ontario Society of Professional Engineers (OSPE), says, in comparison, women are clearly underrepresented in Canada's undergraduate engineering programs.

Enrolment does vary among the many engineering disciplines. "Chemical engineering is the most popular option chosen by women, with environmental engineering and engineering related to biology or medicine coming next," says Ms. Shama.

"Perhaps it is a question of perception," says Ms. Tremblay, noting that the engineering profession may be much different than people imagine. "I encourage more girls and women to investigate the possibility of a career in engineering."

To this end, OSPE has a Women in Engineering Advisory Committee (WEAC), which was formed to improve the participation of women in engineering throughout the province of Ontario.

"Through WEAC, OSPE is working to create a more balanced and inclusive profession that attracts top talent from all sectors of the population," says Ms. Shama.

Canadian Space Agency engineer Isabelle Tremblay was lead systems engineer on the meteorological system that went to Mars on the Phoenix Mission.
PHOTO: CANADIAN SPACE AGENCY

"Men and women are different, of course. We all bring our own contribution. A better gender balance would make the work we do that much better," concludes Ms. Tremblay. ■

This report was produced by RandallAnthony Communications Inc. (www.randallanthony.com) in conjunction with the advertising department of The Globe and Mail. Richard Deacon, National Business Development Manager, rdeacon@globeandmail.com.

National Engineering Month Ontario 2009 Highlights

National Engineering Month (NEM) is a Canada-wide celebration designed to raise the awareness of engineering and engineering technology and the contributions they make to our daily lives, and to encourage young people to consider careers in the engineering field.

Each province selects a suitable week, and this year Ontario will be celebrating engineering from February 28 through March 8, with more than 100 volunteer-staged events throughout the province. New this year, Engineers Without Borders (EWB) is partnering with the Toronto Public Libraries to present a series of interactive workshops at 30 branches across the city.

Event highlights follow, and for additional event information, please visit *www.engineeringmonth.on.ca*.

BELLEVILLE
7th Annual Popsicle Stick Bridge-Building Competition
9 a.m. to noon, Saturday, February 28, St. Theresa Catholic Secondary School, 135 Adam St.
Students in grades 4 to 12 to construct bridges using only 100 Popsicle sticks and white glue. Prizes for best-looking bridge, most innovative design, strongest bridge and most promising bridge builder. Contact Heide-Marie Ross, P.Eng., at 613-398-8492.

BRAMPTON
Popsicle Stick Bridge-Building Competition
9 a.m. to 2 p.m., Saturday, February 28, Calderstone Middle School, 160 Calderstone Rd.
A bridge-building competition for grade 7/8 students, where judging is based on the students understanding their design and the actual destruction of the bridge using a bridge tester jig. Contact Dan Lee, P.Eng., at 905-455-5120.

CHATHAM
7th Annual Impromptu Design Competition
9 a.m., Saturday, February 28, Ursuline College, 85 Grand Ave. W.
An applied science design competition, where teams compete against each other to create the best solution to an engineering problem using the materials provided. Contact Shane McDowell, E.I.T., at 519-436-4600, ext. 2842.

CORNWALL
9th Annual Popsicle Stick Bridge-Building Competition
Saturday, February 28, Cornwall Square, Main Concourse
This is an applied science competition where teams compete against each other to come up with the best solution to an engineering problem using the materials provided. Contact Angela Hastey, P.Eng., at 519-436-4600, ext. 2049.

CORNWALL
8th Annual Popsicle Stick Bridge-Building Competition
Monday, February 23, Cornwall Square, Main Concourse
A Popsicle stick bridge-building competition for pre-registered primary and secondary student teams. Spectators welcome! Contact John St. Marseille at 613-933-5602, ext. 279.

ETOBICOKE
2nd Annual Engineering Idol Competition
2 p.m., Saturday, February 28, Father John Redmond Catholic Secondary School, 28 Col. Samuel Smith Park Dr.
A game-style engineering project, where six area high schools will be assigned the same engineering task associated with energy conservation in houses. Contact Richard Weldon, P.Eng., at 416-964-3246.

GUELPH
Mall Display
9 a.m. to 5 p.m., Saturday, February 28, Stone Road Mall, 435 Stone Rd. W.
Engineering students from the University of Guelph host such activities as balloon rockets, cookie mining, topsy-turvy towers, robotic arm building and the Guelph Gryphons racecar. Contact Bethany Mosca at 519-824-4120, ext. 58549.

KINGSTON
9th Annual Popsicle Stick Bridge-Building Competition
Saturday, February 28, Queen's University, Ellis Hall, 58 University Ave.
Local elementary school students as well as adults to construct the strongest bridge possible using only 100 Popsicle sticks and white glue. Spectators welcome! Contact Doug Hamilton, P.Eng., at 613-389-9628.

LONDON
Paper Airplane Toss and Bridge-Building Competition
1 to 3 p.m., Saturday, February 28, London Boys & Girls Memorial Club, 184 Horton St.
The perfect opportunity to learn more about flight and to compete with your pet design. In addition, previously built bridges will be load tested. Contact Syd Van Geel, P.Eng., at 519-433-9796.

Guiding Exploring Technology - Scouting Exploring Technology (GETSET)
8:30 a.m. to 5 p.m., Saturday, February 28, London Scout HQ, 531 Windermere Rd.
A hands-on day for Guides and Scouts to explore engineering technology and test previously built bridges with the Incredible Hydraulic Crushing Machine. Contact Peter Nicholas, C.E.T., at 519-878-0942.

Engineering Week Luncheon
11 a.m., Monday, March 2, Hilton Hotel, 300 King St.
A luncheon with city engineer Pat McNally, P.Eng., giving the keynote address. Members and public welcome! Tickets: $30 per person. Contact Ian Cheng, P.Eng., at 519-652-2104.

MISSISSAUGA
Bridge-Building Contest
9 a.m., Saturday, February 28, Tomken Road Middle School, 3200 Tomken Rd.
Local grade 7/8 students design, construct and test bridges. Judging for most innovative design, loading capacity and other factors. Spectators welcome! Contact Khaled El-Rahi, P.Eng., at 416-677-3905.

NEWMARKET
Design Challenge Competition
4 p.m., Thursday, March 5, Newmarket High School, 505 Pickering Cres.
Local grade 7/8 student teams design and construct a TV Tower model for the winter Olympics. Spectators welcome! Contact Ed Fung, P.Eng., at 1-888-924-9995, ext. 230.

NORTH BAY
Bridge-Building Contest
12 noon to 3:30 p.m., Friday, March 6, St. Joseph-Scollard Hall
Secondary *School, 1000 High St.*
Local grade 5 to 12 students build bridges, using six pieces of balsa wood, and test them to destruction. Prizes for greatest weight to load ratio, finish and build quality. Spectators welcome! Contact John Simmonds, P.Eng., at 705-474-4667.

OAKVILLE
16th Annual Halton Engineering Challenge
Saturday, March 7, St. Marguerite d'Youville School, 1359 Bayshire Dr.
The top 30 teams from schools throughout Halton meet to present their robotic arms to panels of professional engineers. Spectators welcome! Contact Bernard Amyot, P.Eng., at 905-684-1938.

Water for the World
7 p.m., Tuesday, March 3, Abbey Park School, 1455 Glen Abbey Gate
A showcase for high school students to increase awareness of how engineering and technology can play a role in global water issues. Contact Edward Gerges, P.Eng., at 416-992-6150.

OSHAWA
4th Annual Popsicle Stick Bridge-Building Competition
Saturday, February 28, Ontario Institute of Technology, Market Place Cafeteria
Grade 5 to 8 students from local school boards to participate in a bridge-building contest. Contact Bob van den Berg, C.E.T., at 905-391-6107.

OTTAWA
Engineering Challenge 2009
Friday, February 27, Canada Science and Technology Museum
Teams of grade 4 to 7 students design and construct a disaster relief operation prototype from readily available craft supplies and recycled materials. Contact Kate McLaughlin at 613-993-9284.

PEMBROKE
Popsicle Stick Bridge-Building and Busting Competition
10 a.m., Saturday, February 28, West End Mall, 200 Pembroke St. W.
Local grade 6 to 8 students design, construct and test the strongest/lightest Popsicle stick bridge. Judging for top three strongest/lightest bridges and strongest overall bridge. Contact Lance Goodick, P. Eng., C.E.T., at 613-584-9962.

PETERBOROUGH
Engineering and Technology Challenge
10 a.m. to 2:30 p.m., Monday, March 3, Evinrude Centre, 911 Monaghan Rd.
Teams from district high schools to design and construct a water-retaining dam made from recycled materials. Contact Clarence Klassen, P.Eng., at 705-743-1076.

RICHMOND HILL
6th Annual Design Challenge-Construct a Bridge Competition
10 a.m. - 4:30 p.m., Saturday, February 28, Academie de la Moraine, 13200 Yonge St.
Teams of local grade 5/6 English language students construct bridges in one hour with the least amount of material to withstand the highest load at the mid-span. Contact Mervat Rashwan, P.Eng., ing., at 905-763-2745.

SARNIA
5th Annual Popsicle Stick Bridge-Building Contest Finale
11 a.m., Saturday, March 7, Lambton College, 1457 London Rd.
The finale of a bridge-building competition for local grade 5 and 7 students tests the best design from each school. Contact David Murray, P.Eng., at 519-491-0275.

1st Annual Impromptu Design Competition
Saturday, March 7, Lambton College Gymnasium, 1457 London Rd.
Teams of local grade 9 to 11 students design and create the best solution to an engineering problem using the materials provided in a limited amount of time. Contact Amy Wettges, E.I.T., at 519-541-9732.

SAULT STE. MARIE
7th Annual National Engineering Week Celebration
Saturday, March 14, Station Mall, 293 Bay St.
The Display of Ingenuity, the First Annual Water Bottle Rocket Design Competition, the Sixth Annual Math Challenge and an Egg Drop Competition. Contact François Nzotungwanimana, E.I.T., at 705-946-8130, ext. 8123.

SCARBOROUGH
6th Annual Popsicle Stick Bridge-Building Contest
11 a.m. to 4 p.m., Saturday, February 28, Scarborough Civic Centre Council Chamber
Grade 3 to 8 students design, build and test a bridge that weighs less than 250 grams. Judging on presentation and technical explanation, creativity, construction quality, construction technique and aesthetics. Contact Tom Fernandes, P.Eng., at bridge@peoscarborough.ca.

Hands-On Science Fair & Technology Exhibits
10 a.m. to 4 p.m., Saturday, March 7, Malvern Town Centre, 31 Tapscott Rd.
Exhibits include simple machines, building bridges, electricity demos, magnetics application, a human-powered raceway, solar energy, energy conservation and robotics. Contact Pasha Mohammed, C.Tech., at 416-820-1600.

THUNDER BAY
2009 Challenge & Tour
Thursday, March 5, Lakehead University, 955 Oliver Rd.
Local grade 5 through 8 students participate in team design competitions in chemical, civil, electrical and mechanical engineering and a guided tour of the engineering labs. Contact Dr. Meilan Liu, P.Eng., at 807-343-8952.

TIMMINS
Engineering Week Dinner
5:30 p.m., Thursday, March 5, Dante Club, 162 Cedar St. S.
A dinner for grade 5 to 12 student winners of Science Timmins Software Engineering Convention, government officials and students from Northern College. Contact Ryan Hill, E.I.T., at 705-360-1899.

TORONTO
Designapolooza
12 noon to 4 p.m., Saturday, February 28, University of Toronto, Sanford Fleming Building
Local grade 1 to 4 students construct a dome made of paper that can support itself and fit a group of people inside and make slime. Grades 5 to 8 design a Rube-Goldberg machine to complete a simple task. Visit www.prospective.engineering.utoronto.ca/explore/national.htm to register online.

5th Annual Design Challenge Construct a Bridge Competition
9 a.m. to 2:30 p.m., Tuesday, March 3, Jeanne-Lajoie Elementary School, 150 Carnforth Rd.
Teams of grade 5/6 French language students to construct bridges in one hour with the least amount of material to withstand the highest load at the mid-span. Judging for team co-operation, bridge aesthetics and best weight-bearing bridge. Contact Mervat Rashwan, P.Eng., ing., at 905-763-2745.

Engineering Innovation Forum
6 to 10 p.m., Wednesday, March 4, Ontario Science Centre, 770 Don Mills Rd.
This year's theme, "Engineering Innovations in Intelligent Transportation Systems," includes discussion of air traffic control, subway train control and expressway traffic optimization. For more information, please e-mail Paul Annis, C.Tech., Chair, EIF, at EIF@peo.on.ca.

K'NEX Construction Workshops in five cities

Engineering volunteers will be on hand at five Ontario locations to help children over the age of six create wild and wonderful structures using K'NEX, the popular colour-coded toy. Special features include a bridge-building challenge. The workshops are free with admission.

Waterloo Regional Children's Museum, 10 King St. W., Kitchener
12 noon to 4 p.m., Saturday, February 28; Sunday, March 1; Saturday, March 7 and Sunday, March 8
Call 519-749-9387 for information or consult the website at www.TheChildrensMuseum.ca.

Canada Science and Technology Museum, 1876 St. Laurent Blvd., Ottawa
10 a.m. to 4 p.m. daily, Saturday, February 23 to Sunday, March 2
Call 613-991-3044 (toll-free 1-866-442-4416) for information or consult the website at www.sciencetech.technomuses.ca.

Science North, 100 Ramsey Lake Rd., Sudbury
10 a.m. to 4 p.m., Saturday, February 28; Sunday, March 1; Saturday, March 7 and Sunday, March 8
Call 705-522-3701 for information or consult the website at www.sciencenorth.ca.

London Regional Children's Museum, 21 Wharncliffe Rd. S.
10 a.m. to 5 p.m., Saturday, February 28 and Sunday, March 1, then daily from Tuesday, February 24 through Sunday, March 8, also 5 to 8 p.m. on Friday, March 6
Call 519-434-5726 for information or consult the website at www.londonchildrensmuseum.ca.

Ontario Science Centre, 770 Don Mills Rd., Toronto
11 a.m. to 4 p.m., Saturday, February 28; Sunday, March 1; Saturday, March 7 and Sunday, March 8
Call 416-696-1000 for information or consult the website at www.ontariosciencecentre.ca.

For more information and additional event listings, visit www.engineeringmonth.on.ca.

The five members of the National Engineering Week Ontario Steering Committee are:

CAREERS

Becoming an engineering technician or technologist

As impossible as it is to predict the future, it's not a stretch to believe that engineering technicians and technologists will have a major role in technological change in this century. Members of the Ontario Association of Certified Engineering Technicians and Technologists (OACETT) develop, enhance and implement new products, systems and methods in all disciplines.

Whether it is developing the first handheld biological detector to help experts monitor buildings, subway systems and city cores for bio-aerosols; patenting a design for a vector-neutral truck to eliminate the cumbersome reverse function; or putting together a different procedure for installing a water main, OACETT members are at the forefront of new technologies.

OACETT is a professional association that has been promoting the interests of engineering and applied science technicians and technologists in industry, educational institutions, the government and the public sector for over 50 years.

The association is Ontario's independent certifying body for engineering and applied science technicians and technologists. Its members hold one of the following designations:

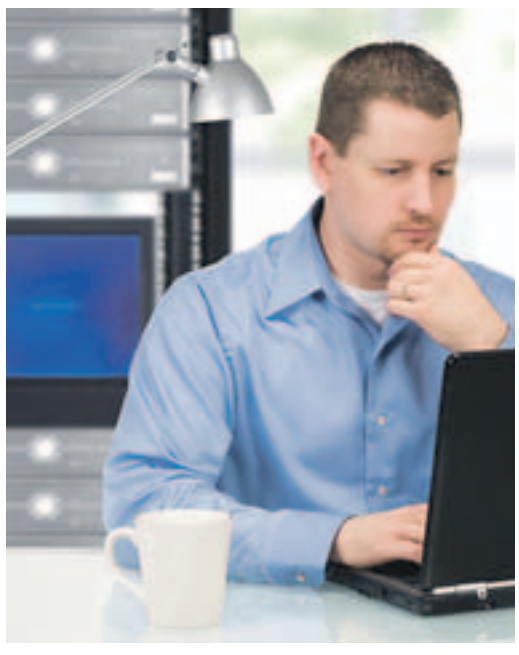
C.E.T. (Certified Engineering Technologist)
A.Sc.T. (Applied Science Technologist)
C.Tech. (Certified Technician)

OACETT currently represents over 23,000 members across the province. Certified members must follow a code of ethics, pass a professional practice exam and have their education and work experience evaluated to ensure they meet national standards.

OACETT has garnered strong partnerships with Ontario colleges. The current college accreditation process offers students the chance to complete several certification requirements as part of their curriculum, bringing them one step closer to certification.

OACETT works closely with industry employers to promote the advantages of hiring OACETT certified professionals. The association is also a strong advocate of helping internationally trained professionals become certified – not only because they bring a global perspective to the workforce, but also because certification reflects competency and professionalism. ■

Visit www.oacett.org for further details about how OACETT members contribute to the advancement of the technology industry.



There are currently 23,000 certified members of the Ontario Association of Certified Engineering Technicians and Technologists, many of whom have been educated in the province's 25 engineering technology programs. PHOTO: ISTOCKPHOTO.COM

Colleges Offering Engineering Technology Programs

Algonquin College, Nepean, www.algonquincollege.com
Cambrian College, Sudbury, www.cambrianc.on.ca
Canadore College, North Bay, www.canadorec.on.ca
Centennial College, Scarborough, www.centennialcollege.ca
Collège Boréal, Sudbury, www.borealc.on.ca
Conestoga College Institute of Technology and Advanced Learning, Kitchener, www.conestogac.on.ca
Confederation College, Thunder Bay, www.confederationc.on.ca
Durham College, Oshawa, www.durhamc.on.ca
Fanshawe College, London, www.fanshawec.on.ca
Fleming College, Peterborough, www.flemingc.on.ca
George Brown College, Toronto, www.gbrownc.on.ca
Georgian College, Barrie, www.georgianc.on.ca
Humber College Institute of Technology and Advanced Learning, Toronto, www.humber.ca
La Cité collégiale, Ottawa, www.lacitec.on.ca
Lambton College, Sarnia, www.lambton.on.ca
Loyalist College, Belleville, www.loyalistc.on.ca
Mohawk College, Hamilton, www.mohawkc.on.ca
Niagara College, Welland, www.niagarac.on.ca
Northern College, South Porcupine, www.northernc.on.ca
RCC College of Technology, Toronto, www.rcc.on.ca
Sault College, Sault Ste. Marie, www.saultc.on.ca
Seneca College, North York, www.senecac.on.ca
Sheridan College Institute of Technology and Advanced Learning, Oakville, www.sheridanc.on.ca
St. Clair College, Windsor, www.stclaircollege.ca
St. Lawrence College, Kingston, www.sl.on.ca

CAREERS

Pathway to professional engineering

Professional engineers, some 70,000 in Ontario and 160,000 across Canada, enhance the quality of life, safety and well-being of Canadians.

In Ontario, Professional Engineers Ontario (PEO) licenses professional engineers, and sets standards for and regulates engineering practice to protect and serve the public interest.

PEO also protects the public by disciplining licence holders who do not maintain the profession's high technical and ethical standards, and by ensuring that only those who are qualified practise engineering or lead others to believe they are qualified to practise. An individual can do engineering work in Ontario without having a "P.Eng." licence, provided a licensed professional engineer supervises and takes responsibility for the work.

As the "Voice of Ontario's engineers," the Ontario Society of Professional Engineers (OSPE) promotes and supports excellence in all aspects of engineering. OSPE's work enhances the profession's recognition by advocating with governments and employers, initiates proactive communications programs and offers exemplary continuing education and career advancement, plus affinity programs.

OSPE partners with Ontario's engineers to identify critical issues within the engineering community. On behalf of its membership – which ranges from students to professional engineers – OSPE conducts member research, monitors the political environment and focuses its advocacy initiatives on issues such as climate change, the economy, public infrastructure development and safe water.

Becoming a Licensed Professional Engineer
Engineering graduates and newcomers to Canada may be eligible to apply for their Ontario engineering licence at no cost. Visit www.peo.on.ca/FCP/FCP1.html for details.

Education: Applicants must be graduates of a university engineering program accredited by the Canadian Engineering Accreditation Board or recognized equivalent. The education of international engineering graduates – who can apply to PEO to start the licensing process before immigrating to Canada – is assessed to determine how closely it meets a PEO syllabus.

Internship: Applicants must work for 48 months – 12 of which must be in a Canadian jurisdiction – and meet five quality-based criteria under the supervision of a P.Eng., who takes professional responsibility for all the work.

All applicants must also be at least 18 and of good character before they can be licensed.

Professional Practice Examination: All applicants must also write and pass the PEO professional practice examination about engineering law, professional liability and the code of ethics.

Licensing Ceremony: Newly licensed professional engineers are invited to attend a ceremony at their local PEO chapter to receive their licence certificates. ■

For more information, please visit www.peo.on.ca and www.ospe.on.ca.

Universities Offering Accredited Engineering Programs:

- Carleton University, Ottawa, www.carleton.ca
- University of Guelph, www.uoguelph.ca
- Lakehead University, Thunder Bay, www.lakeheadu.ca
- Laurentian University, Sudbury, www.laurentian.ca
- McMaster University, Hamilton, www.mcmaster.ca
- University of Ottawa, www.uottawa.ca
- Queen's University, Kingston, www.queensu.ca
- Royal Military College of Canada, Kingston, www.rmc.ca
- Ryerson University, Toronto, www.acs.ryerson.ca
- University of Ontario Institute of Technology, Oshawa, www.uoit.ca
- University of Toronto, www.utoronto.ca
- University of Waterloo, www.uwaterloo.ca
- University of Western Ontario, London, www.uwo.ca
- University of Windsor, www.uwindsor.ca
- York University, Toronto, www.yorku.ca

Canada currently has 160,000 professional engineers, many of whom have been educated in one of Ontario's 15 university-level engineering programs. PHOTO: ISTOCKPHOTO.COM

National ENGINEERING Month

Ontario Science Centre celebrates the universe

2009 is the International Year of Astronomy – and the Ontario Science Centre is doing it up right.

Everything from its full-scale model of the Canadarm, to hosting the compelling Facing Mars exhibit early this year, has visitors celebrating not only astronomy, but Canada's successes in space exploration.

Blair Clarkson, co-ordinator of Special Events and Attractions at the Ontario Science Centre, says, by giving the public hands-on experiences that simulate space exploration, people are then inspired to dream big about their own future accomplishments.

"It gives them a link to space exploration so that they walk away having done something they never thought they could do with respect to science and technology," he says. "They leave saying, 'If I can program this little robot, maybe I can be an astronaut or work a robot on another planet some day.'"

Augmenting the science centre's vast involvement with robotics, people are amazed at the size of the model Canadarm. "To consider that this huge robotic arm could literally pick up a feather is astounding," says Mr. Clarkson. "That all of this technology was developed here in Canada is a phenomenal achievement."

The Ontario Science Centre holds regular star parties – offering the public a glimpse of space through high-powered telescopes. The Earth Hour 2009 Star Party will take place on March 28th during the hour when people in cities around the world switch off their lights. PHOTO: ISTOCKPHOTO.COM

The science centre also hosts star parties in conjunction with the Royal Astronomical Society, with the next one taking place during "Earth Hour" on March 28th. "We did a star party when Mars was last closest to Earth in 2002 and had about 6,000 people," says Mr. Clarkson.

The Ontario Science Centre's Space Hall was recently redesigned to reflect our most current understanding of the universe. Visitors can take a journey through space and time, see a rock specimen from Mars and visit the only public planetarium in Toronto.

"These activities get us thinking about the larger questions, such as, 'Are we alone in the universe?'" says Mr. Clarkson. "We grab the minds of our participants with the significance of science and technology, offering some knowledge-altering experiences." ■