

WE

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WINDSOR ENGINEERING

TINY TECHNOLOGY. GIANT APPLICATIONS.

WINDSOR'S FIRST STATE-OF-THE-ART MICROFABRICATION FACILITY

STUDENT SPOTLIGHT
MAKING AN "IMPACT"
ON GLOBAL EDUCATION

FACULTY INNOVATION
UWINDSOR RESEARCHERS RECEIVE
NEARLY \$5.5 MILLION TO SOLVE
INDUSTRIAL CHALLENGES

ALUMNI PROFILE
UWINDSOR GRADS FIGURE PROMINENTLY
AS CANADIAN WIND ENERGY LEADERS



University
of Windsor
Faculty of Engineering

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content

Dean's Message



Engineering by the Numbers



Feature



Student Spotlight



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Faculty Innovation	12
Alumni Profile	14
Donor Impact	18
News	22

A MESSAGE FROM THE DEAN

In this issue of *Windsor Engineering (WE)*, you'll learn about our new, state-of-the-art micro-nano fabrication clean room; a socially minded engineering student who is helping young children in India access education; and our incredible alumni — two of whom are the forefront of Canada's wind energy industry, and another who is using his engineering profession to make a difference locally and worldwide.

The Faculty of Engineering has been on a positive trajectory over the past number of years. In the last three years alone, there has been significant growth in our graduate and undergraduate enrolment; we have modernized and expanded our laboratories; and have increased the size of our secretarial and technical support staff. Our faculty complement has also grown with the addition of 15 tenure-stream — three teaching and learning — as well as five limited-term faculty members, with additional faculty positions to be filled over the upcoming year.

Parallel to this, we've continued to focus on experiential learning and expanding our engineering programs. As an engineering school, we believe we have an obligation to meet the needs of the local community and industry. That's why our Bachelor of Engineering Technology degree, originally designed to create a pathway from college to university, is now available on weekends for working professionals to expand their expertise in mechatronics, industrial automation, robotics, manufacturing and engineering operational functions.

A new collaboration with global tech giant Siemens has also enabled us to launch a world-class industry certification in mechatronic systems. This eight-week program is also offered on weekends to meet the needs of our community. We've just graduated our first class of students in the recently created Master of Engineering Management program — an innovative joint degree program between the Faculty of Engineering and Odette School of Business, and the only weekend program of its kind in Ontario. These programs are expanding the expertise of local skilled trade professionals and engineers while helping local companies meet market demands.

Construction of our new student success centre is underway. The one-stop hub for students will bring together the WINONE Office for First Year Engineering, engineering communication support, counselling, co-op and international students advisors, as well as our outreach team.

As we look forward to the year ahead, we'd like to thank our alumni, industry and corporate partners, donors and friends who have helped us bring our vision to life.

Sincerely,

Dr. Mehrdad Saif, FCAE, FIET, P.Eng.
Dean, Faculty of Engineering
Professor, Electrical and Computer Engineering



ENGINEERING BY THE NUMBERS



75

outstanding
scholars



20+

engineering
student clubs



11,945

alumni worldwide



125

faculty and
support staff



453

student co-op
placements





75% + 25%

domestic

international

1,461

undergraduate
students

11% + 89%

domestic

international

1,339

graduate students



1,335+

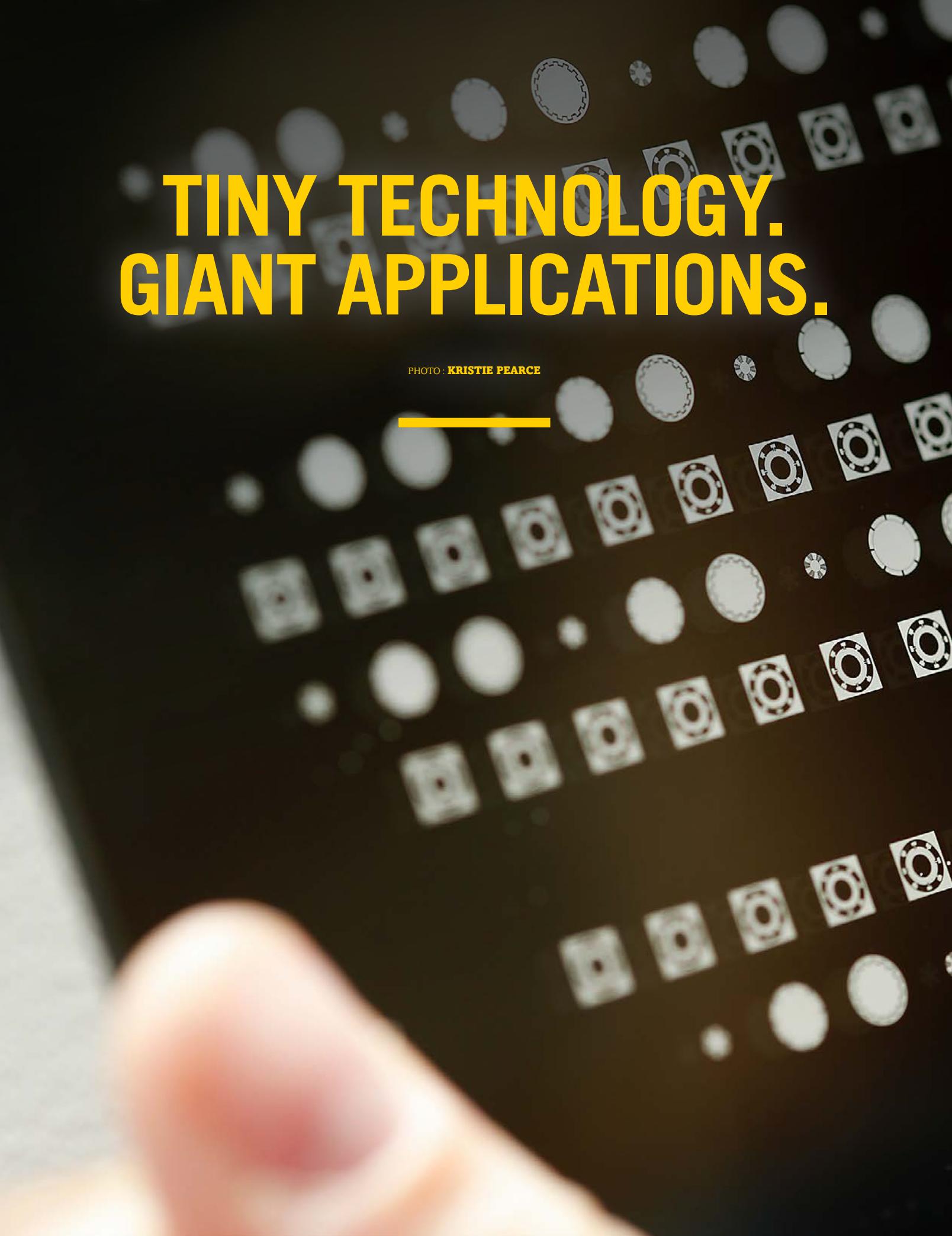
undergraduate
scholarships and
bursaries awarded
annually

1.74+ million

in undergraduate
scholarships

TINY TECHNOLOGY. GIANT APPLICATIONS.

PHOTO : KRISTIE PEARCE





An array of tiny disc gyroscopes developed in Dr. Jalal Ahamed's lab (left) is shown. Each disc contains sensors with a circular resonator surrounded by electrodes as tiny as five microns — smaller than the size of a dime. The stable and precise response characteristics of these structures make them ideal for high-precision sensing applications.

WHAT IF FAMILY DOCTORS HAD ACCESS TO LOW-COST, HANDHELD SCANNERS OR BIOSENSORS THAT COULD DETECT CANCER AT AN EARLY STAGE? What if they could monitor a patient's heart activity through a wearable device and detect early signs of cardiovascular disease? How about a sensor that could prevent intoxicated drivers from operating vehicles or a navigation system that could aid the visually impaired indoors?

Researchers at the University of Windsor hope to advance these technologies and more in Windsor's first state-of-the-art microfabrication facility. The high-tech clean room will be specially designed to facilitate multidisciplinary micro- and nano-scale research by controlling air pollutant levels, pressurization, temperature and humidity. It's slated

to open in 2019 in the Ed Lumley Centre for Engineering Innovation.

"This fabrication facility will provide us with an ideal incubator for academia and industry to foster collaborative research and commercialization of advanced sensors, thus increasing our leadership in the emerging area of the micro nano sensor industry — an area which is rapidly growing," says Dr. Jalal Ahamed, an assistant mechanical engineering professor who designs and fabricates micro- and nano-systems for a variety of applications, including healthcare, automotive, aerospace and manufacturing. "More and more devices are becoming smaller and smarter, so there is an increased need for finding innovative and cost-effective ways to miniaturize these sensors."

Local companies have already shown interest in commercializing



Dr. Arezoo Emadi and Jenitha Balasingam, a graduate student who works with Emadi in the Electrical Micro & Nano Devices and Sensors Research Centre (e-Minds), adjust an ultrasonic imaging system for cancer detection.



Adam Hassan (L), an undergraduate in the Outstanding Scholar Program and Matthew Santos (R), a graduate student who works with Dr. Emadi's e-Minds research team, examine a heart rate monitoring system.

Ahamed's personalized navigation system for the visually impaired and those in low-visibility environments.

Unlike most navigation systems, which rely on a GPS satellite signal, Ahamed's wearable smart device uses motion and acoustic wave sensors to detect nearby objects — the same way bats use sound waves to navigate.

Dr. Arezoo Emadi is an assistant professor in electrical engineering who works on biosensors and smart sensor systems for medical and environmental applications. She says her work in biomedical engineering is driven by a common element.

"Regardless of the disease type, survival rates are associated with a noticeable defining factor — the availability of low-cost and effective early detection and diagnostic tools," Emadi says. "Therefore, our research team in the Electrical Micro & Nano Devices and Sensors Research Centre (e-Minds) focuses on developing innovative

techniques for health monitoring applications as well as diagnostic tools. Our aim is to facilitate cost-effective and more accessible secondary preventive strategies."

Emadi believes the clean room brings micro- and nano-fabrication capabilities in-house that will not only be highly beneficial for faculty and students at the University of Windsor but for researchers across Canada as the facility can support a wide range of cross-disciplinary biomedical research activities.

"It will also help us branch out and establish connections with new industry sectors," says Emadi.

Researchers must wear clean room suits while working in the lab to prevent skin and hair from contaminating results. An environment free of particles is critical when designing biosensors such as Emadi's devices that can detect breast cancer at an early stage, targeted biomarkers of lung cancer

and intoxicated drivers or bacteria in greenhouse vegetables. Emadi hopes these biosensors can one day assist police during roadside tests and prevent intoxicated driving, help doctors detect and treat cancer at an early stage, or prevent consumption of unsafe and contaminated foods. Her research spans campus and includes colleagues who specialize in chemistry, biochemistry and physics, in addition to electrical and mechanical engineering.

Dean Mehrdad Saif says the new facility will help faculty and student researchers make important contributions to the Internet of Things (IoT) and practical, real-world problems.

"Design, development and fabrication of miniaturized, low power microsystems will be critical for further development of IoT and hence, a move towards a highly connected world where devices at our home, industries and in our cars can communicate and share information with one another."**WE**

WINDSOR PROUD.

Amal, President of Women in Engineering, chose Windsor.
uwindsor.ca

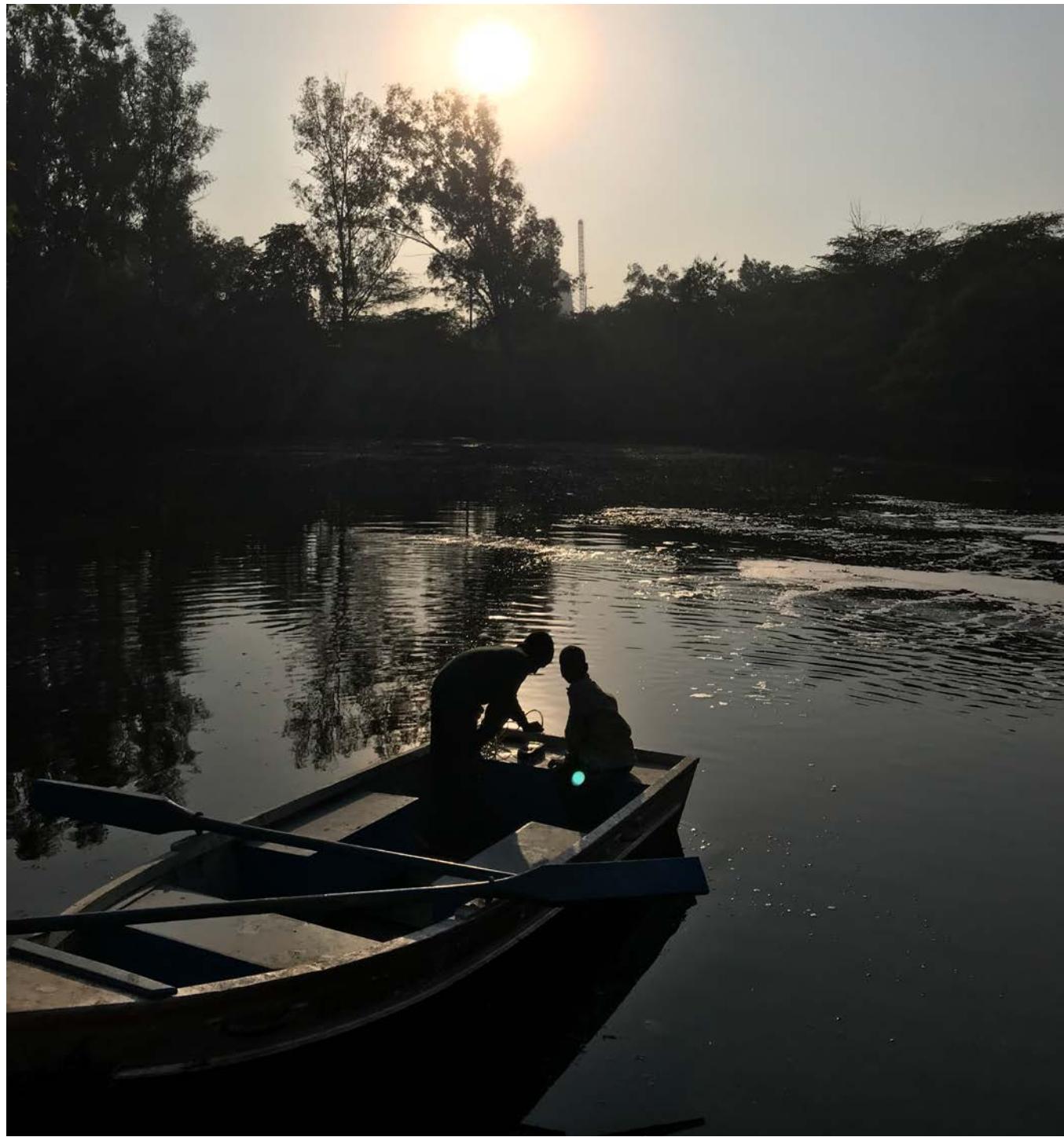
"I FEEL LIKE THE FUTURE'S IN THE PALM OF MY HANDS.
The engineering building is equipped with amazing labs
that offer us so much hands-on experience. It's an inspiring
environment to be in. Everyone knows UWindsor as a
smaller tight-knit campus community and I really see that
when I'm trying to talk to my profs — they're so accessible.
I see them walking around and I can have that one-on-one
connection with them where they can help me and they're
always there for me."



University
of Windsor

STUDENT SPOTLIGHT

MAKING AN “INPACT” ON GLOBAL EDUCATION



Kishan and Guddu enjoyed accompanying Dylan while he implemented a water treatment system in the lake near the compound where they live.



On his daily walk over to a sewage contaminated lake in India where he was conducting his master's research on water quality, Dylan Verburg would be greeted by three familiar faces.

They didn't speak English, but the siblings who lived on the same compound would smile as they followed Verburg around, proudly showed him their cartwheel skills and even volunteered to row a boat for him while he worked on implementing a water treatment system in a nearby lake. The encounters were quickly becoming the highlight of Verburg's five-month stint contributing to an international research project funded by the India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability (IC-impacts).

"I have always loved being around kids and quickly built a connection with them," the environmental engineering graduate student says about his recently orphaned friends, Guddu, 14, Kishan, 9, and Maya, 8, who also happen to be undocumented citizens. "But it really hurt knowing that these little ones weren't getting an education and the future for illiterate individuals in India isn't promising."

So Verburg decided to help the children access more than just clean drinking water. With the support of UWindsor EPICentre's Libro-EPIC Social Enterprise Program and WEtech Alliance, Verburg and a friend he made while living in India founded INpact Collective, a social enterprise aimed at importing artisan products from India to sell in Canada. With the profits, the two plan on enrolling Guddu, Kishan and Maya, as well as children from two other families, in the next session of school. They're also using profits to stock a school supply bank and assist Pehchaan — a school run by 45 volunteers on a street corner for whoever wants to learn.

"This instance is far from an isolated

occurrence," says founding partner and Indian resident Aditi. "Sadly, the streets of Delhi and much of India are full of children with similar stories — unable to go to school and be afforded the basic human right of education."

Verburg says there are many difficulties involved in trying to register undocumented citizens in school. The Government of India has rolled out various aids and programs to help those in need, but there's still a gap, he adds. When he discovered the cost of sending the children to school was quite reasonable, he knew he had to help.

"We hope to be part of the change that helps bring the right of education to the forgotten members of society and drive social change."

Dylan hopes to see these children become active members of society who pay it forward.

Some of the products offered by [INpact Collective](#) imports include Himalayan shawls (sheep wool, yak wool and rabbit fur), pashminas, leather bags, and décor. To learn more, visit [inpact.ca](#).

Verburg created a blog to document the successes and obstacles experienced throughout his work on the project and to share stories about the people he met while immersing himself in a new culture. His blog is posted at [uwindsor.ca/engineering/dylan-verburg](#).

An article about Verburg's water quality research ran in the June 2018 issue of *The Voice*, a magazine produced by the Ontario Society of Professional Engineers. **WE**

Verburg received the Outstanding Youth in Philanthropy Award from the Association of Fundraising Professionals Canada on National Philanthropy Day in recognition of his efforts in India. The award is given annually to an individual between the ages of five and 25, who demonstrates outstanding commitment to the community through direct financial support, the development of charitable programs, volunteering and leadership in philanthropy.

(Photos top to bottom) Kishan, Guddu and Maya would often meet Dylan at the lake where he was conducting his master's research on water quality. INpact Collective purchases goods from several artisans in India.

A portion of profits will assist students who attend Pehchaan, a school run by 45 volunteers on a street corner. INpact Collective co-founder, Aditi, is pictured with students from Pehchaan.

FACULTY INNOVATION

UWINDSOR RESEARCHERS RECEIVE NEARLY \$5.5 MILLION TO SOLVE INDUSTRIAL CHALLENGES



Jeff Canape, a MASC student working with Dr. Andrzej Sobiesiak, holds a piston that will be tested with a thermal barrier coating in an effort to reduce heat transfer and increase engine efficiency. Sobiesiak says more than 30 per cent of engine power is lost due to heat transfer.

A\$5,488,206 grant through the Natural Sciences and Engineering Research Council of Canada's (NSERC) Collaborative Research and Development (CRD) program will advance University of Windsor research on non-destructive testing of materials and use of coatings for multiple industry sectors.

The project is being led by Dr. Roman Maev, director general of UWindsor's Institute for Diagnostic Imaging Research (IDIR) and physics professor, cross-appointed to the university's Mechanical, Automotive and Materials Engineering (MAME) Department. Dr. Andrzej Sobiesiak, head of the MAME department, is assisting as co-principal investigator.

The project, Novel Quantitative Nondestructive Quality Evaluation of Advance Joining and Consolidation Manufacturing Processes, will develop and test resilient coatings and tools for their application, as well as non-destructive, ultrasonic testing methods that can be done on-site for efficiency.

"Being able to diagnose and fix flaws in machinery on-site will also save time and money," says Dr. Maev. "This is the ideal – clustering the technology so it serves many needs is a more efficient use of research resources and it benefits the most users."



Dr. Andrzej Sobiesiak and Jeff Canape examine the engine they are using to test components coated with a thermal barrier.

The pistons will be tested in the Combustion Research Lab with and without coatings to measure how much heat transfer is reduced once the coating is applied.

This project is unique because each industrial partner has its own independent interests, priorities, IP, and management style. It's a complicated project arrangement that requires vast knowledge and experience, as well as the faith and cooperation of all partners.”

The initiative, involving industry partners Bombardier; Ford Canada; Canadian ElectroCoating Ltd./Narmco; Enwin Energy; and the Consortium for Aerospace Research and Innovation in Canada (CARIC), will provide variations on the same technology to solve industry challenges specific to each company. The project has received the largest CRD funding package in UWindsor's history and is unique in that companies across varied industry sectors are collaborating to share the benefits of this knowledge transfer.

Dr. Sobiesiak will test thermal barrier coatings produced by the IDIR on engine components in his lab located in the Centre for Automotive Research Education.

“The largest source of energy loss in engines is due to heat transfer,” Dr. Sobiesiak says. “To make engines better, we try to prevent heat transfer losses. These metallic-based coatings can stop heat from being transferred and improve engine performance.”

The CRD provides funding to support academic-industry research partnerships based on cash and in-kind contributions from industry partners. In addition to monetary contributions, companies can offer research support by providing space, expertise, and the use of tools and equipment, among other things.

Partners will use the IDIR’s technology in the following ways:

Bombardier is expected to benefit from significant cost savings in the area of fuselage skin and wing/tail leading-edge repair through the use of new coatings which, will be developed by the IDIR and tested at Bombardier. The technology will

also be used as a maintenance checkup procedure.

Ford Canada is expected to benefit from the development of advanced thermal barrier coatings, which have low-heat conductivity and the ability to withstand large stress variations. The coatings will be tested at Ford Canada.

Canadian ElectroCoating Ltd. (CEL) Narmco is expected to benefit from effective, real-time monitoring of welds through the development of an advanced portable inspection system. The system will be tested at CEL/Narmco.

ENWIN Energy is expected to be able to improve the conductivity of electrical connectors through the IDIR’s development of improved metallic components and their application. Electrical connectors are universally used in power transmission and their failure represents the weakest link in the power delivery chain. Failing connectors cause power interruptions and waste power in the form of heat loss.

CARIC supports the combined efforts of academia and industry. The research resulting from the scientific and technical contribution from the partners in this project and the work of graduate students will provide added value to industry – including the aerospace industry – and will contribute to strengthening the country’s national innovation network in aerospace.

For more information on the IDIR visit uwindsor.ca/idir 

ALUMNI PROFILE

UWINDSOR GRADS FIGURE PROMINENTLY AS CANADIAN WIND ENERGY LEADERS



Phil McKay BEng '07, MASC '11, and Brandy Giannetta BA '98, MA '99, champion wind energy growth nationwide in their roles at the Canadian Wind Energy Association (CanWEA).

TWO UNIVERSITY OF WINDSOR ALUMNI
AT THE FOREFRONT OF CANADA'S WIND ENERGY INDUSTRY
HOPE TO DRIVE ECONOMIC AND SOCIAL CHANGE THAT WILL ASSIST THE COUNTRY
IN ITS TRANSITION TO A LOW-CARBON ECONOMY.

“You’ll never run out of wind. Not only is the resource infinite, it’s free,” says Brandy Giannetta BA ’98, MA ’99. “Wind energy is now the lowest-cost option for new electricity generation in Canada, and it can be deployed incrementally and quickly.”

Giannetta and fellow alumnus Phil McKay BEng ’07, MSc ’11 champion wind energy growth nationwide in their roles at the [Canadian Wind Energy Association \(CanWEA\)](#), a non-profit industry association that represents the wind energy industry. CanWEA’s members are involved in the development and application of wind energy technology, products and services.

For the last six years, Giannetta has worked with original equipment manufacturers, wind project developers, owners, operators and service providers as CanWEA’s Ontario regional director.

“I always felt strongly about supporting industry and advocating on behalf of a bigger picture,” says Giannetta, who also serves on the Advisory Board of Women in Renewable Energy. “I’ve met so many people who are passionate about what they do and are environmentally conscious but also business driven focused. They lead research to drive their mandate and I just loved everything about what they stood for.”

Giannetta says wind turbines are not always accepted in communities. She’s worked hard to develop best practices in community engagement and make a case for existing fleets, ensuring they are maximized.

“You can farm right up to the base of a wind turbine. This enables farmers to remain on the land, hedge against low-yield crop years and stabilize or increase earning potential.”

Giannetta left the University of Ottawa in 1996 to finish her Bachelor of Arts degree at the University of Windsor. She said the course offerings, smaller class sizes and hands-on teaching methods led her to Windsor’s political science program and subsequent Master of Arts degree. She fondly recalls class debates

and discussions led by political science professor Dr. Howard Pawley, who served as Premier of Manitoba from 1981 to 1988 and Dr. Lloyd Brown-John who served as her thesis supervisor for her MA. Through her UWindsor connections, she landed an internship at the Ontario legislature, which led to a 10-year stint as a political staffer and manager at one of Canada’s largest eco-energy firms, administering Natural Resources Canada’s Retrofit for Homes Program and the Ontario Home Energy Savings Program.

Like Giannetta, McKay’s university experience helped him secure a job right out of school. The mechanical engineering graduate started his career as a design and release engineer and later an engineering supervisor at Roush Industries in Michigan. He spent years designing and testing thermal management systems for performance cars like the Ford GT350 and innovative startups.

“My passion going into Detroit in the first place was driven by a few classes that I had taken on electrical motors and fuel cell systems,” says McKay. “Environmental sustainability has always been a passion of mine and I wanted to get behind unique electric car projects.”

Although McKay did get to contribute to electrification projects, he says “they were very concept driven. More of a showpiece rather than a viable solution for market.”

“I realized that, especially seeing wind turbines going in along the 401, it didn’t matter at that time, sustainability wise, if you were driving electric or gas cars. I wanted to be a part of the solution upstream — renewable energy.”

And so, McKay walked away from the automotive sector to pursue his clean energy dream by testing wind turbines on Prince Edward Island. Now, as CanWEA’s

operations and maintenance program director, McKay works with industry to advance wind farm safety, performance and power grid contributions. He still collaborates with UWindsor’s Dr. Rupp Carriveau BSc ’94, the civil engineering professor who supervised his Master of Applied Science thesis in Group Dynamics of Commercial Scale Wind Turbines.

“I’ve never felt like my time at the University of Windsor was over,” says McKay. “I continue to talk to Rupp and Dr. David Ting and continue to be engaged in work because they really are at the forefront. All these relationships you build and connections you make are launching points for great activities.”

Carriveau now leads a [multi-institutional team that is mapping the next generation of wind energy in Canada](#). He’s working with Western University, Kruger Energy, and the Wind Energy Institute of Canada to create an investment decision support system for commercial wind energy. Early outcomes from this project drove Carriveau to form the Climate Led Energy Evolution Network 2040, a big picture model of the future of energy systems driven by six universities and multiple government and industrial agencies. The network has relied heavily on experts like McKay for industry technical insights and Giannetta for directions on policy and public relations.

“We’re all about making the case for increased wind energy and providing solutions for climate change, but you need science, research and stats to do so,” says Giannetta. “We look to people like Rupp as an authority on the academic side working outside the guise of corporate interests and we use those learnings to inform public policy makers and electricity system operators in their pursuit for affordable, reliable power.” **WE**



THE HUMANITARIAN ENGINEER

MEET DR. NORM BECKER

Although Dr. Becker BASc '67, PhD '70, has worked all over the globe, he always maintained a close relationship with the university. He even brought and sometimes paid out of his own pocket for engineering students to join him on his pro bono projects across the country and in rural China.

Norm Becker's contribution to the engineering profession is incomparable. Dr. Nihar Biswas, UWindsor environmental engineering professor, says that not only did Becker mentor him, he's inspired hundreds of UWindsor engineering students.

"Norm is a true role model who instills confidence and integrity in our students and, while succeeding in the engineering profession, has given back so much to the community," Dr. Biswas says about the University of Windsor alumnus who's spent his 51-year career working on complex engineering projects across North America, the Middle East, Africa, South America, the Caribbean and China.

Although Dr. Becker P.Eng. BASc '67, PhD '70 has worked all over the globe, he always maintained a close relationship with UWindsor. He even brought — and sometimes paid the cost out of his own pocket — engineering students with him on his pro bono projects across the country and in rural China.

For more than three years, Becker recruited engineers, students and trades people to design and plan water filtration systems for villages in the Chinese province of Shandong. While there, Becker and his team of volunteers took time to rebuild a fire-damaged medical clinic that sat unused for more than a year.

"Every school-aged child in the village inspected our work daily and charmed us with their smiles," says Becker. "I think a few of them may aspire to become engineers themselves."



Dr. Norm Becker volunteered to help repair the trusses on the timber roof of the All Saints Church built in 1848 in Windsor, Ont.

Over the last 18 years, he has mentored more than 50 UWindsor undergraduate students. The UWindsor adjunct professor of civil and environmental engineering and founder and president of The Becker Engineering Group of consulting companies has hired Windsor undergraduate and graduate students since 1970.

"It hasn't been a one-way street," says Becker. "They have been generous in sharing their experiences with me, as well."

Becker even funded the Faculty of Engineering's annual Cameron MacInnis Memorial Award, the annual Tom Akeley Memorial Award and, most recently after visiting campus in 2017, the Class of 1967

more than 25 local pro bono projects, including restoration of the All Saints' Anglican Church and an historic Harrow cemetery; construction of the Turkey Creek Pedestrian Bridge and the Const. John Atkinson Memorial Bridge; design and installation of the Underground Railroad National Historic Site monument, a Field of Dreams monument for the Windsor and Essex County Cancer Centre Foundation, and a monument in tribute to members of the community who provide moral and financial support to the victims of Alzheimer's Disease and their families.

Dr. Paul Henshaw, head of the university's Civil and Environmental



Becker helped reconstruct and added a solar-heated second-storey to a fire-damaged medical clinic in a rural village in Shandong, China. Here he is with some of the children from the village who Becker says often visited the construction site.

paramount to the engineering professor. During Becker's time as a councillor with Professional Engineers Ontario, he developed a comprehensive pro bono action plan focused on mobilizing licensed Professional Engineers in Ontario to become more pro-active in donating their professional services to help charities, service clubs and non-profit organizations implement community projects.

In addition, Becker has completed more than 1,000 forensic engineer investigations into major building, infrastructure and industrial losses resulting from explosions, fires, floods, earthquakes, tornadoes and other disasters. He has even

"From water treatment systems in China, to accident investigation in North America, to designing a pedestrian bridge in LaSalle, he has shown how the engineering process can be successfully applied in a number of situations," says Dr. Paul Henshaw. "His pro bono work also demonstrates the work of engineers in benefiting the public. He exemplifies the two pillars upon which successful engineering is based: skill and ethics."

Civil Engineering Scholarship in partnership with his classmates. He was recognized as an Outstanding Philanthropist in 2010 by the Association of Fundraising Professionals and in 2011 received UWindsor's Clark Award, which recognizes individuals who have increased the profile and reputation of the university.

Although he often traveled the globe to help the less fortunate, much of his pro bono work has taken place in the city he's called home since he and his parents landed here in 1951 as refugee immigrants from East Germany.

Becker and the member companies of his engineering group have sponsored

Engineering Department, says he has always admired Becker's versatility as an engineer.

"From water treatment systems in China, to accident investigation in North America, to designing — and building without the use of heavy machinery — a pedestrian bridge in LaSalle, he has shown how the engineering process can be successfully applied in a number of situations," says Dr. Henshaw. "His pro bono work also demonstrates the often unseen work of engineers in benefiting the public. He exemplifies the two pillars upon which successful engineering is based: skill and ethics."

Using his profession to help others is

given expert evidence at more than 50 trials, inquests, tribunals, and hearings.

But Becker says he isn't a "self-made man."

"I have been married to Mary Ellen for 51 blissful years. Both she and our two children rolled up their own sleeves and worked on many of my pro bono projects, including those we completed in rural China, which enriched our lives and reduced our waistlines. My personal and professional life have been closely intertwined." **WE**



Members of the Class of 1967 visit Essex College, formerly the engineering building: (L-R) Philip Waier, Joseph Cohoon, Henry Regts, David Strelchuk and Harold Horneck. Norm Becker not pictured.

WRITTEN BY NORM BECKER BASC '67,
PHD '70 ON BEHALF OF HIS CLASSMATES
FROM THE CIVIL ENGINEERING CLASS OF
'67, PICTURED ABOVE.

In Canada's centennial year, 13 civil engineering graduates from Ontario's newest public university entered into an unsuspecting world to compete for internship positions against those who graduated from older, more prestigious institutions. In 2017, six members of the class returned to campus to rekindle friendships, poke fun at their convincing old men disguises, and offer the following observations and suggestions to those who are following in their footsteps.

Engineers are the primary life-support providers for the seven billion messy people crowded on planet Earth. They rely upon us to put science into action to satisfy their rapacious needs and to accommodate the estimated one billion newbies added to this planet every 12 to 15 years. Their expectation is that these needs be satisfied not only quickly, safely and affordably, but *sustainably* as well. Welcome to our busy profession.

Our effectiveness as engineering practitioners depends upon our ability to

research, develop and apply the newest scientific discoveries and technological advances *wisely*. This wisdom cannot be learned in a classroom. It must be earned in the real world from those who understand the importance of teamwork and have learned how to navigate the mine field of regulations, codes and standards applicable to all engineering work. The engineer must understand how to balance the responsibilities imposed on every project with regard to its safety, performance, cost and scheduling. What we need to earn this wisdom is the *decency* to treat everyone in our workplace with courtesy and respect; the *honesty* to acknowledge that they possess unique knowledge and skills that we don't; the *humility* to admit what we don't know; and the *maturity* not to make promises we can't keep.

Our profession is unique among other regulated professions in Canada and among other engineering professions in the world. First, we are required to act



Dr. Rupp Carriveau talks about his underwater energy storage research with graduates from the Class of 1967 in UWindsor's Turbulence and Energy Lab.

at all times with fidelity to public needs and to put the public's welfare ahead of the interest of our employers and clients. Second, we are more strictly regulated than engineering practitioners in virtually every other jurisdiction in the world. And third, we wear an iron ring on the little finger of our working hand not as a trophy of our profession's greatest achievements, but as a constant reminder of our failures and our failings.

Canada is the fourth largest exporter of engineering services in the world. This is a testament to the legacy of trust and respect that generations of Canadian professional engineers have earned for their technical skills, integrity and professionalism. A Canadian professional engineering licence is a passport to the world.

Our effectiveness as members of a learned profession depends not only on our ability to understand and apply the laws of physics, which are finite and constant. It also depends on our ability to understand and comply with the proliferation of laws, regulations, codes and standards imposed on our work, which are in a constant state of flux. For example, the *Ontario Building Code*, which was first introduced in 1975 to promote public safety through the application of appropriate uniform building standards, has been steadily expanded and enhanced over the last 40 years. It now references more than 1,000 provincial, national, U.S. and international standards. These were

not prepared by engineers for engineers; but by committees representing diverse stakeholder groups. Interpreting the requirements of these esoteric standards is an onerous task.

Engineering students, faculty and practitioners who undervalue their communication skills, handicap their career options and their effectiveness as Professional Engineers. More is expected of us than merely to crunch numbers, prepare drawings and drive computers. We must be able to communicate in the workplace effectively. We owe it to ourselves, our employers, our clients and the people whose safety depends upon us, to upgrade our language skills on a continuous basis so that we can say what we mean and mean what we say, proficiently.

Arrogance and ignorance are every engineer's worst enemies. Humility, integrity, teamwork and continuing education are our best allies. Absolute safety is an absolute myth. Given enough time, everything we engineer will wear out, rust out, break down or fall down. As engineers, we are held to high standards of safety, durability, affordability and sustainability. We need the expertise to be able to assess how, where and when an engineered system is most likely to fail and to provide the safety systems, redundancies and backup systems to prevent a foreseeable failure of one component or sub-system, from causing a titanic disaster.

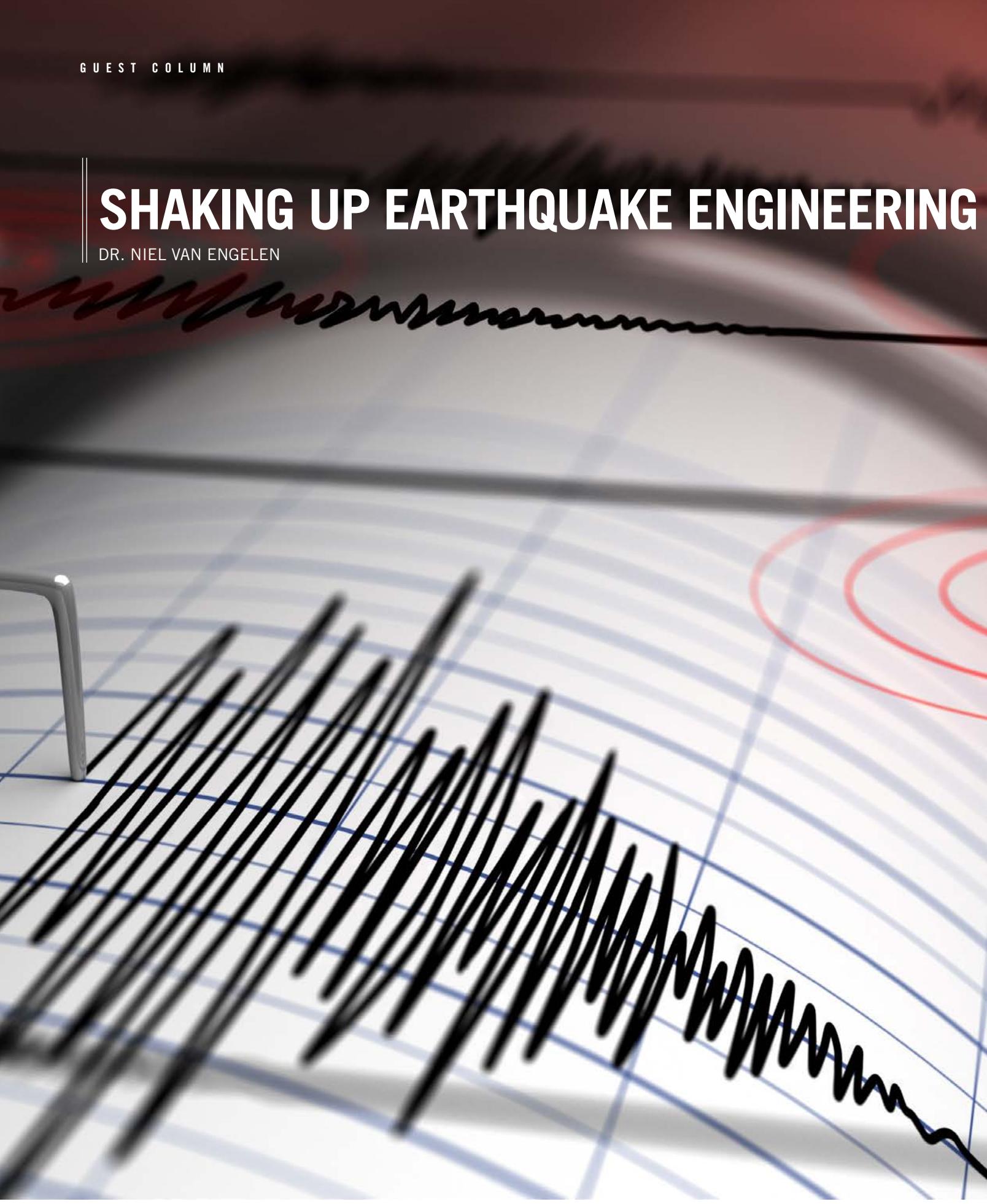
The Civil Class of '67 started their engineering careers with a slide rule and a book of six-place logarithm tables. They not only invested the time, money and effort needed to utilize the best available technology, but pioneered the development and use of computer technology and satellite imagery to enhance their engineering work. New engineering graduates cannot foresee the technological advances that they will need to master during their career. However, like the Class of '67, they will be required to do so.

All 13 members of the University of Windsor's Civil Class of '67 have accomplished more during their varied and lengthy professional careers than they ever thought possible. They are grateful for the quality of the education they received at their alma mater, which provided them with foundations that were strong enough to support their hopes and dreams. They succeeded because they chose realistic career paths that suited their personal interests and abilities.

The Civil Class of '67 wishes the engineering students at the University of Windsor every success in their professional careers and personal lives. Their success will depend not only upon their brain power, but also upon their horsepower and staying power. **WE**

SHAKING UP EARTHQUAKE ENGINEERING

DR. NIEL VAN ENGELEN





Dr. Niel Van Engelen is an assistant professor in the University of Windsor's Civil and Environmental Engineering Department. He specializes in seismic and vibration isolation and structural control.

On April 20, 2018, residents of the Windsor area may have heard a rumble or felt unusual motion. The initial assumptions on the source of the noise and motion were somewhat amusing before word spread that a magnitude 3.6 (Mw) earthquake had occurred. Most Canadians wouldn't list earthquakes as a notable concern in their lives; however, contrary to popular belief, large areas of Canada are at significant risk due to seismic hazards. In fact, some of the most highly densely populated areas of Canada (e.g. the west coast and the east coast along the St. Lawrence River) can and have experienced large earthquake events. A repeat of historical earthquake events in these areas could incur more than \$60 billion in damage, and that's not even the worst-case scenario!

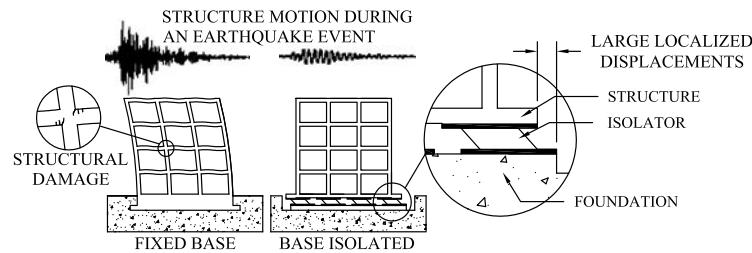
From a structural engineering perspective, the primary objective is to protect life safety. The traditional approach to designing a structure for earthquakes anticipates and accepts that damage will occur. It is simply not feasible to design a conventional structure to withstand significant ground motions without damage. Alternatively, the structure is designed to be ductile and the damage is utilized as an energy dissipation mechanism. The major shortcoming with this approach is that often the damage is so severe that it is impractical to repair the structure and it must be demolished and rebuilt. This methodology resulted in Christchurch, New Zealand, a city of about 370,000 people, having to demolish more than 1,000 structures in the central business district after a series of earthquakes. Although life safety was generally protected in these structures, the social and economic impacts of the demolition can't be understated.



Rubber is commonly used in isolation devices. It is an ideal material due to the soft material properties and ability to accommodate large recoverable strains.

Seismic base isolation is a state-of-the-art approach to earthquake engineering that decouples a structure from strong ground motions. It requires the installation of a specialized layer of flexible devices, known as isolators, usually at the foundation of the structure. During an earthquake, the deformation is concentrated at the isolation layer, which can undergo large displacements without any damage. This mechanism is effective at protecting the occupants and preventing damage to the structure and the contents even during large earthquakes.

Canada has thus far lagged other countries, such as Japan and the United States, in adopting this technology. Provisions for base isolation have only recently been included in the National Building Code of Canada. Base isolation remains an active area of research to develop new types of isolation devices, to improve upon existing methods, and to better understand the expected structure response. Undoubtedly, base isolation will become a common feature of Canadian cities, aiding to mitigate the significant risk that earthquakes present. **WE**



A comparison of a conventional fixed base structure and a base isolated structure during an earthquake.

NEWS

FIRST GRADUATING CLASS OF UWINDSOR'S MEM PROGRAM EXCELLING IN WORKFORCE



Samer Toukan (L) and Easa Ahmadzai (R) say their MEM courses in finance, accounting, entrepreneurship and marketing helped them found Archery Mayhem — a combat archery game similar to dodgeball that instead uses bows and soft foam-tipped arrows.

The landscape of the Canadian job market has changed and engineers like Jennifer Côté are preparing themselves for today's competitive work environment by expanding their expertise.



Jennifer Côté says the skills she acquired in UWindsor's weekend Master of Engineering Management program are quickly transferable and have been beneficial to the daily situations in her professional career.

Côté is one of 19 working professionals who took advantage of the University of Windsor's weekend Master of Engineering Management (MEM) program and graduated in its inaugural class this fall. As a senior manager of corporate planning at ValiantTMS in Windsor and mother of three, the program was an ideal fit for Côté, who says each MEM course is tailored to real-life working situations that arise in the workplace.

"The students are all working professionals with backgrounds in engineering, which simulates real working conditions and allows for more dynamic learning through group discussion and brainstorming. Because many of us come from diverse industries, we see similar and different issues arising in real-life

situations – it makes for a great learning experience."

In 2016, the University of Windsor's Faculty of Engineering and Odette School of Business partnered to launch Ontario's first weekend MEM degree. The two-year program allows working professionals to enhance their technical expertise with business and managerial skills without interrupting their careers.

Kevin Curridor says it was beneficial to work on his studies in parallel with work and apply what he was learning in class to his job at a specialized logistics company with more than 100 facilities worldwide. Curridor took advantage of his time in the program to audit and improve company cost models, which he says were "a huge success and received well amongst executives," and also helped



The first graduating class of UWindsor's MEM program is pictured with UWindsor faculty during the university's 2018 Fall Convocation Ceremony.

expand his role at Syncreon to a global level. He especially liked the program's entrepreneurial focus and hopes to launch his own company one day.

His classmates Easa Ahmadzai and Samer Toukan turned their class business plan into a reality. Ahmadzai and Toukan say their MEM courses in finance, accounting, entrepreneurship and marketing helped them found Archery Mayhem — a Windsor-based, combat archery game similar to dodgeball, but using bows and soft foam-tipped arrows.

"We do everything from finance and IT to designing bows and arrows, and marketing," Toukan says. "And all of those skills are skills we picked up in the MEM program."

The two launched Archery Mayhem in April 2018 and say the response "has been excellent."

"Our customer retention is more than 50 per cent week over week. As soon as people know about us, they keep coming back. We think our experience is second to none in Windsor," adds Toukan.

As a product development engineer with Ford Motor Company in Dearborn, Mich., Ahmadzai is responsible for assessing million dollar purchasing quotes from an engineering standpoint.

"A part of my role includes assessing the validity of quotes and I believe the

MEM finance and accounting courses have significantly improved my financial literacy," says Ahmadzai. "The MEM program can open many doors, and becoming an entrepreneur is just one of them."

Despite already being involved in management at HRYCAY Consulting Engineering Inc., Justine Arbor says the program has helped her with the management of her team and "in navigating my organization as a whole."

"Principles of innovative design have assisted me in developing more efficient solutions to project issues, while financial management principles have been useful in establishing budgets and project metrics."

Professionals who take part in the program must have a minimum of two years of work experience in an engineering-related field and an undergraduate degree in engineering or a related discipline. The inaugural class has an average of seven years of work experience.

The MEM program has attracted students from a variety of engineering disciplines, including mechanical, industrial, computer, electrical, civil, aerospace and even a kinesiology graduate who works as a human-factors engineer. Professionals from out of town are taking advantage of the curriculum offered every second weekend on Friday

evenings, 6 to 9 p.m. and Saturdays, 8:30 a.m. to 5:30 p.m.

"We can tell this is a much-needed program," says MEM program coordinator and professor Ali AbdulHussein. "This is what today's market demands. You're not just sitting behind a computer and designing a product or programming software; you need to understand the human factor of the project that you're running. You also need to be able to communicate with engineers of different backgrounds and people in the sales and marketing department."

AbdulHussein says most of the courses in the MEM program are group focused and centered around presentation and communication skills. In addition to core competencies in applied finance, administration, market research, engineering design and product management, students in UWindsor's MEM program can focus their degree in manufacturing strategy; operations management; project management; supply chain management; or entrepreneurship and innovation.

For more information about the University of Windsor's MEM program, visit uwindsor.ca/mem. **WE**

SUMMER CAMP INTRODUCES YOUNGSTERS TO ENGINEERING CONCEPTS



Mirandi McDonald, a graduate student of civil and environmental engineering, (top right) watches as Anna Noelkaramatos, Emma Hobbs, Emily Tayag and Ivanka Pavlovich test their parachute during an engineering summer camp at the University of Windsor.

Campers had a hard time picking their favourite activity at UWindsor's Engineering Lancer Summer Camp.

"I loved everything. I can't pick one thing. We built stuff, we had fun, we were creative. I love engineering," says Emma Hobbs, a Grade 5 student at D. M. Eagle Public School.

The week-long camp hosted 60 children between the ages 8 and 12. Participants were introduced to a variety of engineering-related concepts, including aerodynamics, forces and motion, fluid dynamics, material strength and the design process. The July 9 to 13 camp included outdoor activities and swimming at the St. Denis Centre.

"I liked the egg drop and parachute. It was fun to drop stuff," says Emily Tayag, who was visiting from Toronto and signed up for the camp with her cousin, Ivanka Pavlovich.

"It was fun to build it too," Pavlovich, chimed in.

"But dropping stuff is more fun," Tayag added.

Female registrants in this year's Lancer Engineering Summer Camp received a discount on the \$160 registration fee thanks to a grant provided by Union Gas and Build-A-Dream. The grant aims to encourage more young women to explore engineering and participate in engineering-related activities.

"I liked how we used our creativity to build stuff. It was really fun," says Anna Noelkaramatos.

A second session took place August 13-17, 2018. To learn more, visit uwindsor.ca/engineering/outreach. 

UWINDSOR STUDENTS AND ALUMNI HONOURED BY ENGINEERING COMMUNITY

Several University of Windsor engineering students and alumni were honoured during a local celebration of the engineering profession.

Windsor's Engineering Month Committee hosts an annual awards luncheon to "bring public awareness to the diversity and importance of the exciting fields of engineering and technology and invite prospective students to consider these professions," says Tina Hawco, chair of the Engineering Month Committee.

The committee is comprised of engineers and technologists from local municipalities, consulting engineering firms, the University of Windsor, St. Clair College, professional associations, and industry.



Priscilla Williams was one of three alumni named in the Top Three Under 30 by Windsor's Engineering Month Committee during a ceremony April 13, 2018 at the Fogolar Furlan Club.

Priscilla Williams, a PhD candidate in the civil and environmental engineering department, Michael Cappucci BASc '11, and Aaron Blata BASc '14, were named the Top Three Under 30 during a ceremony April 13, 2018 at the Fogolar Furlan Club for demonstrating higher than average abilities to undertake engineering projects, outstanding work ethic and leadership early in their careers.

The Windsor-Essex County Engineer of the Year Award went to Wanda Juricic BASc '00, an electrical engineer at Union Gas. She was recognized for being a role model and significant contributor to the advancement of the engineering profession as exhibited by her dedication to her career as well as community service.

Steven Vrantsidis, a third-year mechanical engineering student, received the Windsor-Essex County Engineering Month Award, awarded annually to an outstanding third-year engineering student at the University of Windsor.

The Heavy Construction Association awarded three UWindsor students with cash prizes based on construction reports submitted during their co-op placements. First place went to Joseph Bressan, second place to Abdelrahman Salem, and third place to Jesse Golding. **WE**

DR. BISWAS HONOURED FOR WORK ON CLEAN WATER



Dr. Nihar Biswas

UWindsor professor Nihar Biswas received an honorary degree from the University of Guelph in recognition of his contributions to environmental engineering education and to clean water technology that has improved the lives of people worldwide.

UWindsor professor Nihar Biswas received an honorary degree from the University of Guelph in recognition of his contributions to environmental engineering education and to clean water technology that has improved the lives of people worldwide.

Dr. Biswas, a former acting vice president-research, former senior associate dean of engineering, and a faculty member since 1981, told graduands at the June 12 Convocation celebration that continued access to safe clean water continues to pose a challenge in countries across the globe.

"You will of course face challenges in your work, in your life," he said in his formal address acknowledging his honour. "Innovation could be the key to solve those challenges." **WE**

ENGINEERING CAREER FAIR DRAWS HUNDREDS



More than 430 students met with employers during the Career Fair held in the Ed Lumley Centre for Engineering Innovation.

A dedicated engineering career fair provided hundreds of University of Windsor students an opportunity to engage with local employers as they prepare to transition into the workforce.

In collaboration with the Faculty of Engineering, the Department of Co-operative Education and Workplace Partnerships hosted its first career fair for new grads, soon-to-be grads and recent alumni seeking full-time employment in the engineering industry.

More than 430 students equipped with resumés met with 19 employers on June 1, 2018 in the Ed Lumley Centre for Engineering Innovation.

"Connecting employers to our career-ready students is very important to us, so we are thrilled with the outcome of our Engineering Career Fair," said event organizer Sarah Overton, a campus engagement coordinator in the university's department of Co-operative Education and Workplace Partnerships. "We look forward to building on the success of this event in the future."

The free event included a LinkedIn photo booth and more than 40 representatives from industry. **WE**

UWINDSOR LAUNCHES WEEKEND MECHATRONICS PROGRAM

A new weekend technology program offered by the University of Windsor is helping local companies meet market demands.

The Bachelor of Engineering Technology (BEng Tech) degree, originally designed to create a pathway from college to university, is now available on weekends for working professionals to expand their expertise in mechatronics, industrial automation, robotics, manufacturing and engineering operational functions.

“Companies heard about this and expressed a great deal of interest,” says Dr. Mehrdad Saif, UWindsor’s dean of engineering. “We thought, why not do it on weekends for these types of students and put in place more courses around the theme of mechatronics and industrial automation? As an engineering school in Windsor, we have an obligation to meet the needs of the community and industry.”

The program allows skilled trades professionals like Michael Elachkar, of Zion Robotics & Controls, to complete a degree while continuing to advance their career. The father of two, who graduated from St. Clair College with a three-year electronics engineering technology diploma in 1999, said he jumped at the chance to further his education without disrupting his family life and career.



Sandro Gabr is one of 31 working professionals taking advantage of UWindsor's BEng Tech Mechatronics program now offered on weekends.

“We have the practical knowledge and the university is bridging the gap between our work experience and the theoretical aspects of the job. It’s making us very well-rounded and will increase our talent level and make us more competitive,” says Elachkar, the director of new business at Zion Robotics and Controls, a local company that specializes in automation programming at a global level. “We decided to invest in our employees and, as a result, will be reimbursing all of the tuition for full-time employees to complete the program. That’s how much we believe in this program.”

More than half of the 31 students currently enrolled in the BEng Tech program are from Valiant TMS. The global company based in Windsor which serves the automotive, aerospace and heavy industry sectors, is also subsidizing tuition for its employees.

“We need our people to understand life cycle,” says Pete Naysmith, director of services and spare parts for Valiant TMS Corporation. “How do I come up with a solution to a problem that’s cost-effective and robust? A technician out of a two-year school doesn’t have that ability and our customer demand is getting higher. This program allows our technical people to realign their skills with our customers’ needs.”

Tony Elias, the chief executive officer of Valiant TMS Global Operations, says to stay competitive in a global market, the company is beefing up its engineering department with Programmable Logic Controller (PLC) programmers, which are some of their highest-paid positions in the company and a career path for BEng Tech graduates.

“Industry 4.0 and making smart tools — that’s where we’re going,” Elias says. “We’re competing with places around the globe. The exciting part is we can be cost effective in North America.”

The BEng Tech program is open to those with a three-year technology diploma from a Canadian college, an engineering degree from an accredited Canadian university or a four-year university degree in a scientific or technical subject from a Canadian university. It’s also open to those with the same qualifications from an equivalent overseas institution.

For working professionals, it can be completed in four semesters. On a full-time basis, it can be completed in three consecutive semesters — one full year. Graduates will be prepared to pursue or advance their careers in automation, product design, testing, development, systems engineering, field engineering, technical operations, and quality control.

“It also opens doors for future work with our bordering country,” says Cam DiMario, installation and launch manager for PLC and robot programmers at Valiant Machine and Tool. “I am very appreciative of the university supporting local industry and of our company supporting us with this program.”

For more information, visit uwindsor.ca/bengtech. **WE**

ENGINEERING PROJECTS DEMONSTRATE APPLICATION OF KNOWLEDGE TO REAL-WORLD PROBLEMS



Claudia Lutfallah demonstrates her Capstone project for a crowd during UWindsor Engineering's Capstone Design Demonstration Day on July 27, 2018 at the Ed Lumley Centre for Engineering Innovation.

The exciting part of working on a project redesigning the intersection of California Avenue and Wyandotte Street is the possibility of seeing it implemented, says Emma Teskey.

The fourth-year civil engineering student, was part of a group that suggested several changes to the pavement and traffic signalling systems that would make the crossing safer for pedestrians and smoother for vehicles.

It was one of more than 60 projects displayed by graduating engineering students during Capstone Design Demonstration Day, July 27, 2018, in the Centre for Engineering Innovation.

Teskey and her teammates — Abigayle Diemer, Kailee Dickson, Curtis Lanoue, and Sarah Zaarour — suggested altering the traffic signals so that cars and trucks are stopped in all directions while pedestrians cross, a system known

as the “pedestrian scramble.” They also proposed adding wide, white stripes to the crosswalk pavement and relocating a transit stop so buses do not block the intersection.

“We think our proposals have a chance to be implemented,” Teskey says. “When we’re finished, we plan to submit them to the city.”

Other projects ranged from the design of super-mileage vehicles to automated hydroponic growing schemes, a system able to detect drowsiness in drivers, and a robot controlled by human gestures.

Of the last, electronics and computer engineering student Craig Ruthven said it was the most fun of any project he had ever worked on.

“We started with an idea and brought it all the way to fruition,” he says as his partners Phuc (Joseph)

Tran and Alexander Keys showed how they rigged a visual sensor to interpret human motions and instructed a robotic appendage to mimic the actions.

Professor Colin Novak, capstone coordinator in the Department of Mechanical, Automotive, and Materials Engineering, called the day an enormous success.

“The projects were fantastic,” he says.

“We have our usual team competition projects and they seem to improve every year, but the ones that stand out to me are the one-off projects where the students get together with industry and build something that is real-world and meaningful to the companies that will hopefully eventually hire our engineers.” **WE**

STUDENT OUTREACH EVENT RECEIVES PROVINCIAL RECOGNITION

There's more to engineering than designing bridges and cars.



Eleana Paguaga Amador (L) and Larysa Hyzka (R) display their awards at the Ontario Society of Professional Engineers Annual General Meeting on May 8, 2018 in Oakville.

"We want to show people that engineers don't just design things, they solve the problems of the world," says Larysa Hyzka, a fourth-year civil engineering student at the University of Windsor.

Hyzka teamed with classmate Eleana Paguaga Amador to share this message with the public by creating and hosting I Look Like an Engineer, a community outreach event that ended up landing the pair provincial recognition.

Paguaga Amador and Hyzka invited Windsor-Essex community leaders and students to the Ed Lumley Centre for Engineering Innovation to discuss why they chose to pursue engineering and what the profession means to them.

"Story after story, we heard from speakers who believed their highest potential could be reached through engineering because it allowed them to make the lives of others easier," says Paguaga Amador, a third-year industrial engineering student.

The event won second place in the National Engineering Month Ontario Steering Committee's first University Student Outreach Challenge. The competition challenges students to host a public outreach event in their local community during National Engineering Month in March to "ignite passion for engineering in others and potentially

improve the diversity of future engineering students."

Hyzka and Paguaga Amador attended the Ontario Society of Professional Engineers Annual General Meeting on May 8, 2018 in Oakville to receive recognition and a cash prize of \$1,500.

I Look Like an Engineer speakers included Peter Bziuk BSc '88, MSc '03, manager of design and construction services for the County of Essex; Abby Diemer, 2017-2018 Ontario Ambassador for the Canadian Federation of Engineering Students and former Windsor Women in Engineering executive; Sabrina Angco, president of the Institute of Industrial and Systems Engineers; Julia Costa, 2017-2018 president of the Windsor Engineering Student Society; and Destiny Soney, vice president of the University of Windsor Native Student Alliance.

Paguaga Amador says Soney, an indigenous student in her third-year of environmental engineering, delivered a "poignant and powerful speech."

"Destiny explained that the Creator gave her people the job of protecting Turtle Island and her degree will help her play her part," says Paguaga Amador. "If everyone saw engineering as a way to fulfill society's greatest needs, then maybe more students would consider this a career path." **WE**

PROGRAM PROVIDES CERTIFICATION IN MULTIDISCIPLINARY MECHATRONICS

In collaboration with global tech giant Siemens, the University of Windsor has launched a world-class industry certification in mechatronic systems.

Mechatronics is a multidisciplinary field of engineering and technology, which integrates mechanical engineering, electrical engineering and computer engineering to design and implement complex engineering and manufacturing systems.

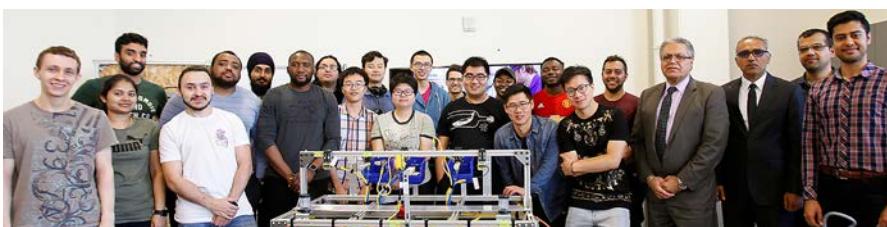
The weekend Siemens Mechatronic Systems Certification Program (SMSCP) focuses on key industrial skill areas such as electrical components, sensors, motor controls, PLCs, as well as hydraulics and pneumatics. In addition to teaching the

technical knowledge, SMSCP content also stresses trouble-shooting and system-based technical thinking via hands-on training.

"The technicians and engineers of today work in fast-paced, high-tech environments and need a comprehensive knowledge of mechatronic systems technology," says program coordinator

Dr. Shahpour Alirezaee. "There is a growing demand for people skilled in mechatronics."

The eight-week program will be offered again in the fall semester. For more information, visit uwindsor.ca/smscp. **WE**



The inaugural UWindsor Siemens class with Dean Mehrdad Saif and program coordinator Dr. Shahpour Alirezaee.

HIGH DEMAND FOR UNIVERSITY OF WINDSOR'S FIRST-EVER COMPUTER PROGRAMMING WORKSHOP FOR GIRLS



Anna Medved, a 15-year-old Grade 10 student at Sandwich Secondary, takes part in the university's first-ever coding workshop for girls.

Spots went quickly for the University of Windsor's first-ever Go CODE Girl workshop for girls in Grades 7-11.

A packed room of 40 participants learned the basics of Python, a computer programming language, Feb. 24, 2018 at a free workshop hosted by the university's Faculty of Engineering and Faculty of Science.

"In Canada, we have a huge void and gap, not only in gender but also in skilled programmers," says Dr. Ziad Kobti, professor and head of UWindsor's School of Computer Science. "We have a very small number of females who pursue careers in computer science and yet the employment after a four-year degree is nearly 100 per cent. Thanks to local donors, we've established a female entrance scholarship to encourage women to apply to this exciting field."

Sponsored province-wide by the Ontario Network for Women in Engineering (ONWIE), Go CODE Girl aims to educate, inspire and equip girls with the digital skills, confidence and resources needed to pursue education in technology, computing and engineering.

Most of the girls who registered had previously participated in science,

technology, engineering and math (STEM) related outreach events hosted by UWindsor. Anna Medved, a Grade 10 student at Sandwich Secondary, said her interest for science and engineering sparked at a young age thanks to her parents who both work in STEM-related fields.

"It's been there all my life and I guess it's normal for me to go that way," she said at the event after learning to code for the first time. "Maybe girls who don't have that background or role models in these fields don't think of it as an option or find it interesting."

Medved said she will most likely pursue an education in civil engineering because she's interested in the composition of structures.

"Today, I learned how to do Python coding and turtle functions. I thought it was pretty cool to learn how the computers do stuff for you and, if I do go into engineering, I may have to use programming when working with blueprints or when I have to show how different parts work together," she says.

Dr. Jennifer Johrendt, the engineering faculty's assistant dean of student affairs and associate professor in the mechanical, automotive and materials engineering department, said at previous events, some female students said they feel more comfortable trying things for the first time when they're around female peers.

"We also have some pretty experienced programmers here today, so it's a great way for the girls to educate each other and try things for the first time in a comfortable environment," Johrendt says.

Kobti explained that programming requires you to learn and record step-by-step how to use computer logic to solve problems.

"Hopefully, the girls unraveled the mystery of how to solve a problem by telling the computer how the solution works so the computer can carry out the solution. That's what we call coding." **WE**

ENGINEERING STUDENT REPRESENTS UWINDSOR IN PROVINCIAL THESIS COMPETITION



Liza-Anastasia DiCecco, mechanical, automotive and materials engineering master's student, presents during the Three Minute Thesis competition at the University of Windsor on March 26, 2018.

A UWindsor engineering graduate student represented the University of Windsor at a provincial Three-Minute Thesis competition.

Liza-Anastasia Di-Cecco, a master's student in Materials Engineering, presented her 3D-printing research at the Ontario 3MT® competition final on April 19, 2018 at York University.

Di-Cecco had three minutes and a single presentation slide to deliver her presentation, "Move over plastic, we're 3D printing titanium."

"In my research, I'm studying the material properties of pure titanium made through a specific 3D-printing process using plasma fabrication," Di-Cecco says. "I'm concentrating on looking at their strength, hardness, and durability, while also looking at what's happening at the microscopic level to characterize these parts."

Di-Cecco says 3D printing is expanding our ability to make parts and

more complex items such as custom prosthetics and orthotics and lighter, more fuel-efficient cars.

"Even advanced rocket fuel nozzles that might someday get us to Mars! The possibilities of this research are endless," she added.

Three UWindsor Engineering graduate students made it to the final six in the University of Windsor's Three-Minute Thesis competition where Di-Cecco took home a second-place prize of \$500.

Rounding out the top six with Di-Cecco were engineering graduate students Dylan Verburg and Lucas Chauvin. This year's competition took place March 26, 2018 in the Alumni Auditorium. Twenty UWindsor graduate students competed by presenting their thesis, major research paper or dissertation topic in under three minutes.

The Three-Minute Thesis competition started at the University of Queensland in 2008 and quickly spread worldwide. **WE**

ELECTRICAL ENGINEERING CLUSTER LED BY UNIVERSITY OF WINDSOR RESEARCHERS WINS AWARD

The Windsor Section of the Institute of Electrical and Electronics Engineers (IEEE) Canada has been recognized for its leadership and networking events.

The IEEE Windsor Section, led by University of Windsor researchers, received IEEE Canada's Exemplary Section Award for small sections for its 2017 activities, leadership, management and administration.

Esrafil Jedari, vice-chair of the IEEE Windsor section and UWindsor research assistant in the Department of Electrical and Computer Engineering, says the section was recognized for hosting around 30 technical, professional and social events on campus; its large network of volunteers and growth in memberships; and organizing and hosting the 30th Annual Canadian Conference on Electrical and Computer Engineering (CCECE 2017).

The group has grown steadily since it branched out on its own as the 21st section in Canada in 2014 after operating as a student branch for two years within the Southeastern Michigan Section. The



Windsor Section of the Institute of Electrical and Electronics Engineers (IEEE).

majority of its 306 members — which includes industry from the Windsor-Essex region — are University of Windsor faculty and students. The Windsor Section has three technical joint chapters for six IEEE professional societies, a University Windsor student branch and two affinity groups: Young Professionals and Women in Engineering.

The Exemplary Section Award is given annually in three categories: large IEEE sections with more than 1,500 members; medium sections with 501 to

1,500 members; and small sections with 500 or fewer members. The Windsor Section was recognized by the IEEE in 2016 as an Outstanding Section Membership Recruitment performer for doubling its membership.

IEEE Canada is the Canadian arm of the IEEE as well as the constituent society of the Engineering Institute of Canada (EIC) for the technical fields of electrical, electronics, and computer engineering.

For more information about the IEEE Windsor Section, visit windsor.ieee.ca. **WE**

HUM GENERATING BUZZ ON THE OTHER SIDE OF THE WORLD



Journalist Takayo Nagasawa of Japan's national public broadcaster NHK interviews engineering professor Colin Novak about the infamous Windsor Hum.

A University of Windsor engineering professor was featured in a Japanese science show for his investigation into the source of the infamous Windsor Hum.

A camera crew from Japan's national public broadcaster NHK made a special trip to campus in spring 2018 to interview and film Dr. Colin Novak, an associate professor in the mechanical, automotive and materials engineering department.

Production coordinator Takayo Nagasawa said the segment will run as part of an episode focused on the sound of the cosmos and people who make data from sound.

"We found out about the Windsor Hum and we couldn't tell the story without interviewing Dr. Novak," she said during a break from filming in the university's Centre for Automotive Research and Education.

The film crew also interviewed local residents who have been plagued by the hum for the past seven years. In 2013, the Canadian Department of Foreign Affairs and International Trade contracted Novak and Western University to conduct a joint acoustic study.

Novak's Noise Vibration and Harshness-Sound Quality Group set up low-frequency noise monitoring stations across the city's west end. The university's Great Lakes Institute for Environmental Research (GLIER) even loaned Novak's team a research vessel so they could drift up and down the Detroit River with

portable infrasound arrays to record noise within the hum's frequency range.

"What was unique about the Windsor hum was not only the low-frequency nature of the sound but the fact that it could be heard by people over an area greater than 10 km," Novak says.

Six months' worth of fieldwork followed by four months of post analysis revealed the hum's likely source was a blast furnace on Zug Island on the Detroit River.

"Based on all the data that we collected, we determined there's no danger of the sound other than the fact that it's very annoying and if you're highly affected, it can affect your sleep, etc.," Novak says. "That brought a lot of relief to people, however, at the same time, people still want it to go away."

Novak says since then, the hum's intensity has decreased and fewer people report hearing the disruptive rumbling.

"I can speculate that perhaps those who are a part of the cause of the sound are taking appropriate process changes to minimize and hopefully eventually eliminate the propagation."

The segment aired July 5, 2018 on NHK's television show Cosmic Front Next, a program that works to "unravel the universe and the mysteries concerning earth." **WE**



(L) Charlene and Shawn Yates attend ARDC's 20th anniversary celebration. (Centre) Shawn enjoyed spending his free time on the golf course. (R) Shawn and his son Bradley on the day of his graduation from the University.

MENTORING ALUMNUS LIVES ON THROUGH MEMORIAL SCHOLARSHIP

“THE MEASURE OF A MAN IS NOT COUNTED BY HIS CAREER OR BY HIS ACCOMPLISHMENTS. IT IS COUNTED BY HIS FRIENDS AND FAMILY AND BY THE PEOPLE HE TOUCHES THROUGH THE WAY HE LIVES HIS LIFE, HOW HE TREATS OTHERS, AND BY HIS VALUES AND ETHICS.”

DR. JOHN MANN

When Charlene Yates reminisces about her husband, she often thinks of a phrase he uttered so often during their 34 years of marriage.

“Come on, Char. It’s once in a lifetime,” he would say before whisking her away to explore the pyramids in Egypt, take a cruise, or play golf in Pebble Beach, California.

“He would go anywhere, any time,” Charlene fondly recalls.

The two met in high school. Charlene and Shawn would exchange shy hellos as they passed in the hall. It wasn’t until the two snuck into a Windsor wine festival that Shawn, the captain of the football team, worked up the courage to ask Charlene to dance.

“The rest was history,” she says.

The high school sweethearts married in 1983 and in 2017, watched their only son Bradley, 31, leave the house. They were starting to prepare for the next chapter of their lives. More traveling, more golfing and more time to spend together. But that all changed when Shawn was diagnosed with cancer in May 2017. Doctors were hopeful the active 57-year-old would respond well to treatment. Ten weeks later, his fight came to an end.

Shawn BASc ’82, MBA ’92 was instrumental in founding UWindsor’s co-op program with the FCA Automotive Research and Development Centre (ARDC). Since its inception in 1996, more

than 500 students have been trained at ARDC, many of whom have become employees of the facility.

Tony Mancina, the ARDC's director of Canadian engineering, says Shawn was an unrelenting mentor who left a long-lasting impact.

"He was an attentive mentor for all the students, taking the time to help them through all their concerns and ensuring that their adjustment was smooth," says Mancina BASc '91, MASc '94. "He always championed their causes and cared deeply for all of the students."

Charlene wishes to keep her husband's memory and legacy alive by establishing a University of Windsor endowed scholarship in the UWindsor engineering and MBA grad's name. The Shawn Yates Memorial Scholarship will support undergraduate students in the university's Faculty of Engineering who followed a similar academic journey as Shawn and will echo the qualities of the students he mentored during his 34-year career at Fiat Chrysler Automobiles (FCA).

Egidio Mosca, a former student who later became friends with Shawn, remembers when his project was dragging halfway through his second co-op term and senior members wanted to pull the plug.

"Shawn fought for me and kept the project in place," says, Mosca BASc '98, MASc '03. "When it was all over and done, the project won some great awards and solid recognition all because Shawn believed in me when no one else did."

"He was a mentor, brother, teacher and one of my best friends," he adds. "I had the pleasure, honour and privilege of sharing 20 years with one of the best human beings."

Shawn spent the beginning of his career with Chrysler Canada developing many world firsts, including fuel storage systems, fuel tank gauging systems, various innovative fuel filling systems and the world's first certified, ultra-low emissions vehicle. He even worked with government and fuel supply groups to develop various road vehicle standards.

"Developing high-pressure, crash-worthy storage systems required significant expertise, special skills, cost consciousness and a willingness to innovate and embrace creativity – this was totally out-of-the-box thinking at its finest," says Dr. John Mann, who retired as vice president of engineering - the division of Chrysler Canada where Shawn worked the majority of his career. "These words describe Shawn Yates, the professional

engineer, exceedingly well."

Shawn later became operations manager responsible for logistics, operations and budget development and control and also managed the technical and program aspects of Chrysler Canada's research and development tax credit program. On top of it all, Shawn was a gifted speech writer, Mann says, "Shawn's polish and professional approach to helping me with some of my own speeches always helped make me look a little better than I really was."

"All this said, the measure of a man is not counted by his career or by his accomplishments. It is counted by his friends and family and by the people he touches through the way he lives his life, how he treats others, and by his values and ethics," says Mann. "In these respects, Shawn Yates was simply an outstanding man."

To contribute to the Shawn Yates Memorial Scholarship, please contact Katie Mazzuca, major gift officer at 519-253-3000 ext. 5959 or Katie.Mazzuca@uwindsor.ca. 



Shawn at the Automotive Research and Development Centre (ARDC).

PLACE OF PROMISE



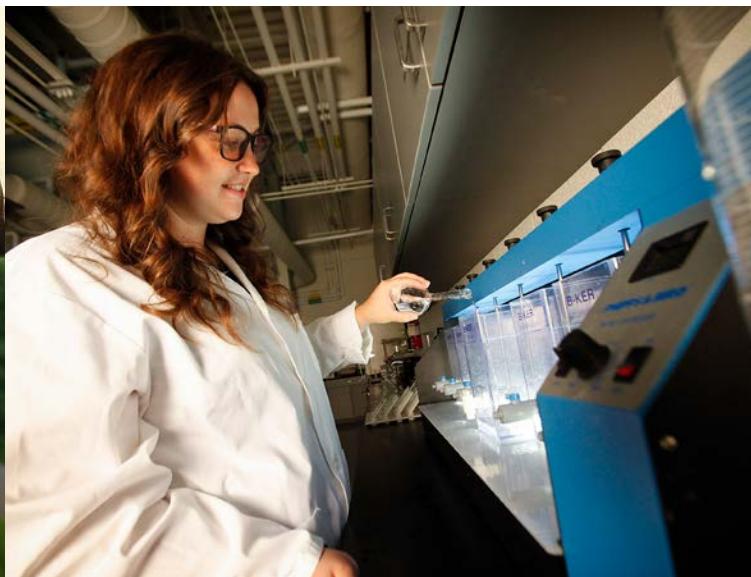
Supporting the Faculty of Engineering

GIVING BACK FROM ONE GENERATION TO THE NEXT

INVESTMENTS IN OUR STRATEGIC FUNDING PRIORITIES WILL ADVANCE INNOVATIVE ENGINEERING RESEARCH, ENRICH THE STUDENT EXPERIENCE AND ALLOW US TO CONTINUE TO GROW OUR EXPANDING ENGINEERING PROGRAMS. THANK YOU FOR JOINING US IN OUR VISION OF THINKING FORWARD, ENGINEERING AN IMPACT, AND MAKING A DIFFERENCE.



Navya Saini, Brett McCallum, Claudio Martini, Veronika Byra and Dina Hashweh (L-R) pose with their capstone design project — a green energy multi-use building.



As an undergraduate, Christina Ure received a National Sciences and Engineering Research Council (NSERC) scholarship and participated in the Water Environment Association of Ontario student design competition, placing second in the province.

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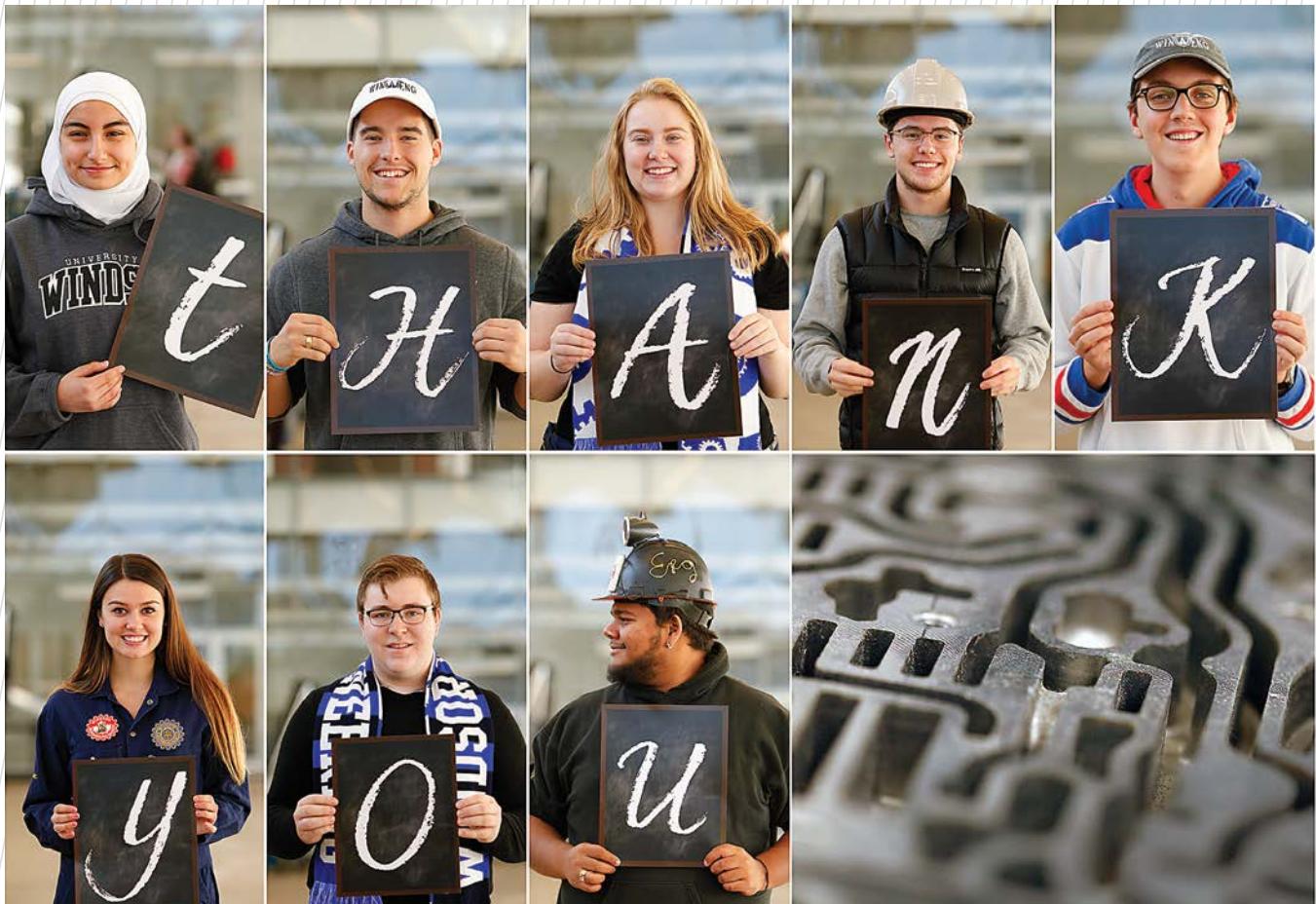
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"The scholarships that I receive encourage me to keep working hard to reach my academic goals. It is inspiring to know that there are people rooting for us to succeed. As a future engineer walking in your footsteps, I thank you for believing in me."

Hadil Moussa

*Fourth-year Electrical & Computer Engineering student
President, UWindsor Women in Engineering Club*

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THINKING FORWARD, ENGINEERING AN IMPACT, MAKING A DIFFERENCE



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