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ISSUE 1 / 2017

WINDSOR ENGINEERING

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University of Windsor
Faculty of Engineering

WE

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content

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A MESSAGE FROM THE DEAN

Welcome to the inaugural issue of Windsor Engineering, the Faculty of Engineering's annual magazine published for its alumni, faculty, staff and friends. In each issue, you'll read about just a few of the faculty's students, researchers and alumni who are making an impact on campus, in the community and around the world.

Our first issue starts with a look back at the first graduating class of engineering and the bedrock established by Dr. Frank A. DeMarco, a visionary leader and first dean of engineering.

Today, we echo his vision as we strive to engineer an impact through our student graduates; our faculty's research and discoveries; and engagement in our community both locally and globally.

Since 2010, when construction began on our state-of-the-art Ed Lumley Centre for Engineering Innovation, enrolment in engineering has nearly doubled. Faculty members now teach and mentor more than 1,500 undergraduate and nearly 1,200 graduate students. Consistent with the growth in our student enrollment, the number of faculty and staff within our faculty has also been on the rise. Since 2011, 10 new faculty members have joined the Faculty of Engineering and there is a plan to add another 10 faculty positions over the next year or two.

Investments in our three strategic funding priorities — **Experiential Learning: Going Beyond the Traditional Classroom; Scholarships: Increasing Access and Opportunity; and Research: Driving Engineering Innovation** — will help students become socially aware and responsible contributors to society, enrich the student experience and allow us to continue to grow our expanding engineering programs while advancing innovative research.

This is a new chapter for the Faculty of Engineering. I'd like to thank our committed alumni, industry and corporate partners, donors, and friends in the region, across the country and around the globe who are joining us in our vision of thinking forward, engineering an impact, and making a difference. WE

Sincerely,

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

ENGINEERING BY THE NUMBERS

8,440+
alumni worldwide

Celebrated 20-year partnership with Fiat Chrysler Automobiles (FCA) Canada. The University of Windsor – FCA Automotive Research and Development Centre (ARDC) opened in May 1996, marking the first of its kind in Canada.

Ranked #1 rising star among Canada's universities by Huffington Post in 2016.

71%
domestic

+

29%
international

=

1,527*
undergraduate students

17%
domestic

+

83%
international

=

1,197*
graduate students

*2016 enrolment

52%*
increase in undergraduate enrolment.

1,200+
in scholarships distributed annually

$10 million+
raised in philanthropic gifts and pledges in the last five years.

323
co-op placements in 2016.

Was the host university for the AUTO21 Network of Centres of Excellence during its 15 years of operation between 2001-2016.

112
professors and support staff.

$1.8 million+
in scholarships awarded annually.

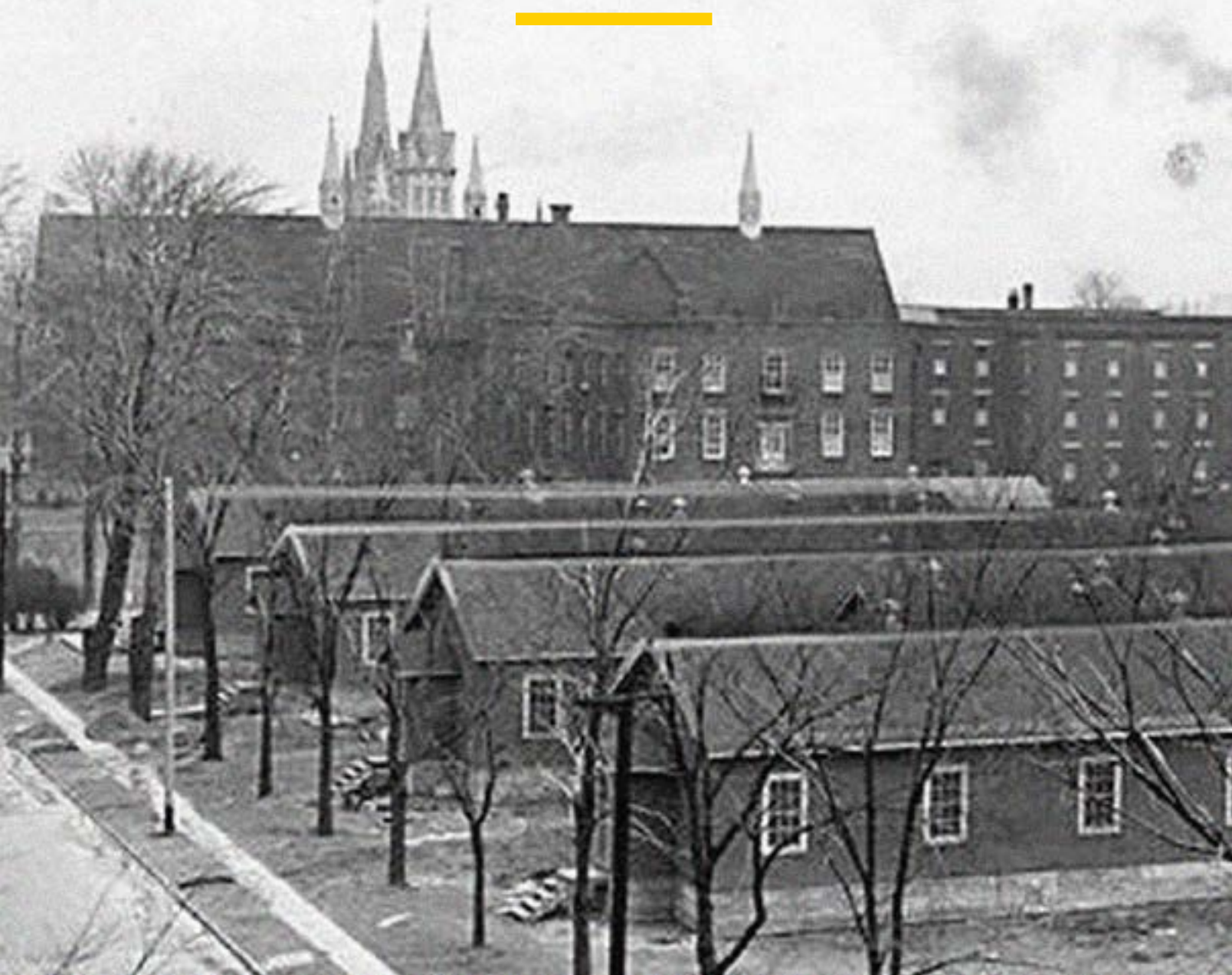
84.6%
of undergraduate students employed 6 months after graduation.

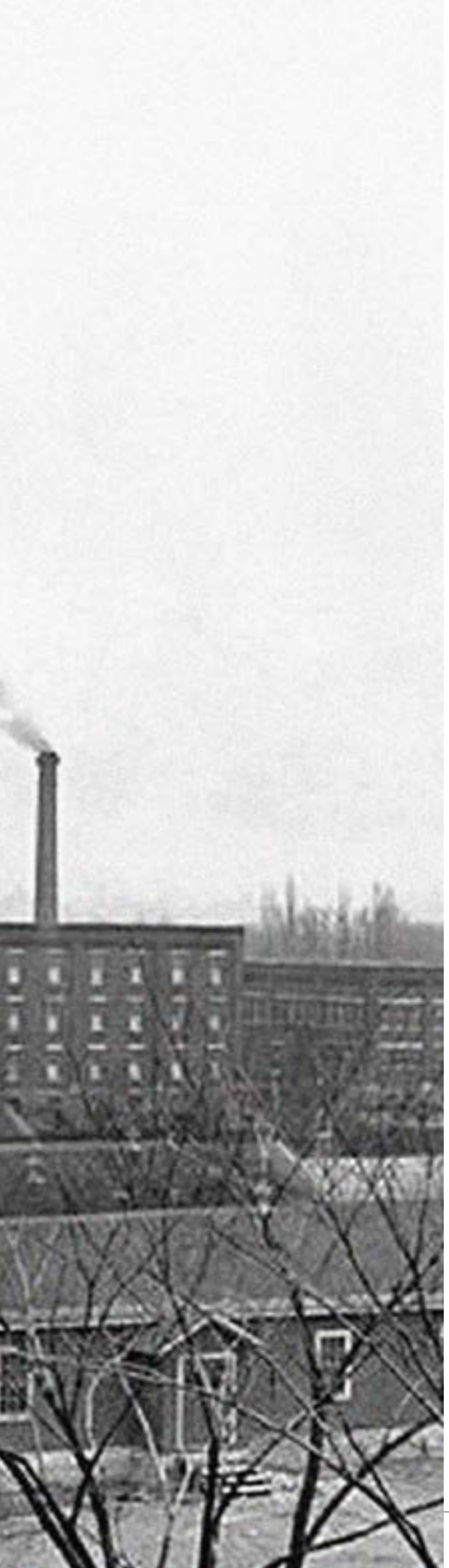
114%*
increase in graduate enrolment.

*Since the Ed Lumley Centre for Engineering Innovation opened.

WRITING A NEW CHAPTER IN ENGINEERING HISTORY

PHOTO : **UNIVERSITY OF WINDSOR ARCHIVE**





The inaugural engineering class studied in Quonset huts (left). The prefabricated, steel structures were moved to campus after serving as air force barracks at Windsor Airport.

IT WAS 1957 AND THEY WERE THE LATEST ADDITION TO CAMPUS. You could identify them by the large slide rules holstered on their belts. They were young, intelligent, dedicated and enjoyed blowing off steam by "demolishing" several beers.

It was the year Essex College launched an engineering program and nearly 100 men put their futures in the hands of the non-denominational school affiliated with Assumption University.

"It was pretty risky, but we were given assurance we would be accredited upon graduation," says Lloyd Kubis BASc '61, one of 25 of the all-male first graduating class. "Dr. Frank DeMarco and the others worked very hard to achieve it. And we got our iron ring."

Dr. DeMarco, the first dean of engineering who later served as the University of Windsor's inaugural vice president, developed the science and engineering departments at Essex College, which merged with Assumption University in 1963 to form the University of Windsor. Under DeMarco's leadership, the chemical, civil, electrical and mechanical engineering programs were not only accredited, they churned out top-notch graduates who could compete with those from long-established schools.

With no real home on campus yet, the inaugural engineering class studied in Quonset huts — lightweight, prefabricated, steel structures that were moved to campus after serving as air force barracks at Windsor Airport. The coal fire stoves spewed soot as they heated the huts, coating the engineering drawings students meticulously spent hours creating. Make-shift labs squeezed into extra basement space on campus took

The first engineering student society formed in 1960.

hours to setup and tear down. Annual tuition cost nearly $700 and there were no portable calculators, photocopiers, cell phones, fax machines or personal computers in sight. Time outside of class was spent watching basketball games at St. Denis Hall and on Fridays, downstairs in The Pit for shoeless "sock-hop" dances to protect the gym floor.

"Because of the lack of extensive engineering lab facilities, we were given a broader education in law, finance and economics, which later on proved very worthwhile, especially in my case," says Kubis, who went on to start operations worldwide for Motorola. Kubis landed his job with Motorola right out of school and spent most of his 38-year career traveling and meeting with senior level governments throughout the Asia-Pacific region.

The facilities may have been small, but Bill Wilson, BASc '61, MASc '69, recalls using a computer for the first time in one of his labs. It was called the LGP-30 and it was first manufactured in 1956 with a retail price of $47,000.

"That was exciting to me," says the electrical engineer. "We were also required to write a program with an IBM 1620 scientific computer."

After moving to California to work at Honeywell, Wilson helped Doric Scientific design the first micro-processor controlled data acquisition system, an instrument that measures multiple temperatures throughout a factory. He later designed a data acquisition and control system for a research nuclear reactor.

As the college grew, so did its research capabilities. DeMarco and his colleague, John Huschilt, a physics instructor, helped placate concerns of Windsorites by determining a recent snowfall was not radioactive. Radiation rumours spread in the community after stories circulated about hydrogen bomb blasts and a fall of radioactive snow in Saskatchewan. DeMarco and Huschilt used a Geiger counter, an instrument used for measuring ionizing radiation, to determine the snow was safe.

"I wanted to be world-class," DeMarco, now 96, recalls saying before he accepted the role as the first principal of Essex College at 38 years old. "I said to them 'I will not accept if you don't have salaries that are completely competitive with the rest of the province and if you do not support research.' And they gave me both."

DeMarco also pushed for a much-needed, state-of-the-art engineering building equipped with labs and lecture halls. In 1962, his vision became a reality when Essex Hall, a $5 million facility, opened its doors. Today, the building houses science classrooms, offices and labs. Construction of a 46,000-square-foot addition for science research and innovation is underway.

Dr. Carl St. Pierre BASc '61, MASc '62, the first engineering student society president, recalls spending five, seven-hour days a week in class and labs completing the "onerous curriculum."

"You didn't have time to do anything in between classes. When you went home to do schoolwork, you had to team up with a buddy or two or you weren't going to graduate in engineering," says St. Pierre, who gave up a basketball scholarship to keep up with his courses.

But the engineering students were known for more than just academics. After exams, the engineering student society would buy a keg of beer at the local bar to celebrate. In senior year, the society organized an eight-day trip to tour the hydro generating plant under Niagara Falls, an experimental nuclear reactor at the University of Toronto and steel-making facilities in Hamilton. DeMarco originally opposed the trip that interrupted classes until he saw the effort the students put forth in contacting companies and arranging tours.

"We realized Dr. DeMarco had two sides to him," says Dr. St. Pierre. "He was a very strict disciplinarian, but he was flexible if you had good intentions and were organized."

Perhaps that's why the leader of the college turned a blind eye when a department head's Volkswagen was found in the attic of Essex Hall. Or the time concrete block walls barricading the entrances to Dillon Hall appeared overnight.

Sixty years may have passed since, but today, engineering students must still be creative, good communicators, smart team workers and professional, according to St. Pierre, who was hired by DeMarco in 1965 to teach in the university's chemical engineering department.

Paul MacDonald, Ivan Rodriguez, Bill Wilson, Gary Potter and Carl St. Pierre (L-R) examine Wilson's drafting project during class (1958).

"They still need to acquire the scientific and technical knowledge to design, analyze and build useful, helpful and functional works while being accountable for functional safety and the environment," says the professor, who retired from UWindsor in 1996 after 32 years of service. "Students from my day are no different from the students today, because if they don't have these skills, they're not going to be an engineer."

One notable difference on campus is the 300,000-square-foot Ed Lumley Centre for Engineering Innovation (CEI), a $112 million building that houses nearly 3,000 students. CEI features more than 80

Prof. Ali AbdulHussein speaks to a Master of Engineering Management class in the Ed Lumley Centre for Engineering Innovation.

Today, women make up 17 per cent of the engineering student body and a Women in Engineering club operates on campus.

research labs, one of the largest structures lab in Canada and will soon house a state-of-the-art clean room that will put UWindsor at the forefront of the rapidly growing field of nanotechnology. Since CEI was built in 2011, graduate enrolment has skyrocketed by 114 per cent and by 52 per cent in undergraduate programs.

"Engineering as a profession has evolved and it's no longer enough for our graduates to be good at just one branch of engineering," says Dr. Mehrdad Saif, the dean of engineering. "Automotive is a prime example. Electrical engineers have as much — if not more — to do with automotive than perhaps mechanical. In order to address these challenges of the future, we need to expose students to other disciplines."

Saif points to areas like mechatronics, a multidisciplinary field in which one of 12 new full-time engineering faculty hires will specialize and Ontario's first weekend Master of Engineering Management program that UWindsor launched in 2016. The program, run in collaboration with the Odette School of Business, helps students build and combine engineering, business and entrepreneurial skills. The faculty's recent addition of a technical communications development and support coordinator will help embed oral, visual and written technical communications throughout the engineering curriculum.

The faculty is also focused on increasing female enrolment. Since 2007, more than 500 girls have participated in UWindsor Engineering-led initiatives that encourage young women to explore science, technology, engineering and mathematics fields. Within those years, female enrolment in the Faculty of Engineering has increased by five per cent. Today, women make up 17 per cent of the engineering student body and a Women in Engineering club operates on campus.

Among the dozens of engineering student groups is the Windsor chapter of Engineers Without Borders (EWB) Canada — a community of students, professionals and fellows who work to create systemic change in Canada and sub-Saharan Africa. In addition to high school classroom visits, annual youth conferences and fundraisers that address global systemic poverty, the Windsor EWB chapter is hoping to soon offer UWindsor students an opportunity to earn a Global Engineering Certificate.

To receive the certificate, students must complete a blend of curricular and co-curricular experiences such as volunteer work, internships, and relevant coursework that have strengthened their leadership skills, expanded their problem-solving ability and helped them develop global awareness.

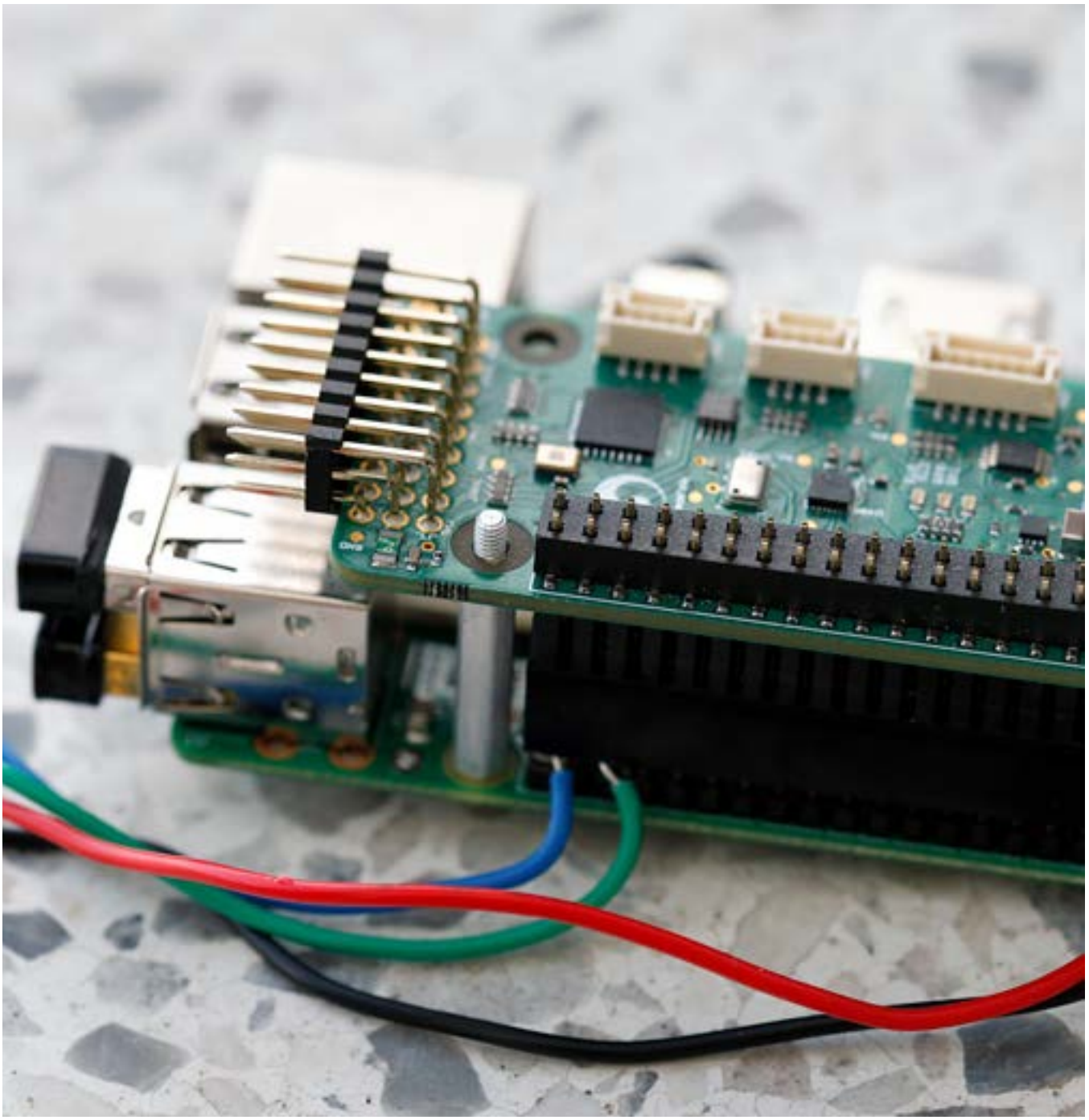
"Engineers of the future not only should be able to do the technical work, they should have social awareness and responsibility," Saif says. "In the last few years, we've been pushing to expose our students to other aspects of engineering."

In addition to creating Canada's first automotive and environmental engineering programs, the engineering faculty works closely with industry on a wide range of innovative technologies, including microelectromechanical systems and sensors that have the potential to transform healthcare or energy storage methods that increase the efficiency of our power grid and decrease carbon dioxide emissions.

"This is a new chapter for the Faculty of Engineering. A lot of exciting things are happening," Saif says. "Although engineering is not always clearly apparent, engineers touch everything — everything around us is engineered, which gives us an opportunity to make an impact in the world." WE

STUDENT SPOTLIGHT

TECHNOLOGY PIONEERED AT UWINDSOR AIMS TO ASSIST VISUALLY IMPAIRED



Prototype of Jaekel's wearable smart device that can track steps and map out surrounding obstacles in real-time.

Josh Jaekel (L) and Dr. Jalal Ahamed (R), pictured in the Ed Lumley Centre for Engineering Innovation, have developed a personalized navigation system that has the potential to assist the visually impaired and those in low-visibility environments.

A UWindsor engineering professor and student have developed a personalized navigation system that has the potential to assist the visually impaired and those in low-visibility environments.

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

"GPS cannot give you a pin-point location inside a building," said Jaekel, a third-year electrical and computer engineering student. "Our technology is more advanced than GPS, especially in indoor settings where GPS signals are often unreliable. It can track steps, walls, detect barriers and tell which floor you're on."

Jaekel's full-time research with Dr. Ahamed is supported by a Natural Sciences and Engineering Research Council of Canada (NSERC) Undergraduate Student Research Award he secured earlier this year. A video he produced about his navigation research was recently short-listed in an NSERC video competition.

Jaekel also joined such industry giants as Apple and Bosch on March 29, 2017 at the Institute of Electrical and Electronics Engineers (IEEE) International Symposium on Inertial Sensors and Systems in Hawaii to present the navigation system.

Their patent-pending technology uses algorithms and a wearable device to track steps and map out surrounding obstacles in real-time. Jaekel hopes industry can help shrink their palm-sized prototype so it can easily be integrated into a shoe or white cane.

Dr. Ahamed, director of UWindsor's MicroNanoSystems Group, said local companies have already shown interest in commercializing the technology.

"Our technology can provide collision avoidance navigation for first responders, utility workers, firefighters, miners and military personnel working in dark environments," he said. "Similar technologies exist, but most use cameras that require light."

Jaekel said, with their prototype, it doesn't matter if it's light or dark, or what the surrounding temperature is. As well, the design utilizes acoustic sensors making it less expensive than current devices that rely on costly lasers and cameras.

"We wanted to design it so that it was accurate and effective, but also affordable," he added. WE

FACULTY INNOVATION

UWINDSOR RECEIVES $730K TO ADVANCE NANOTECHNOLOGY RESEARCH

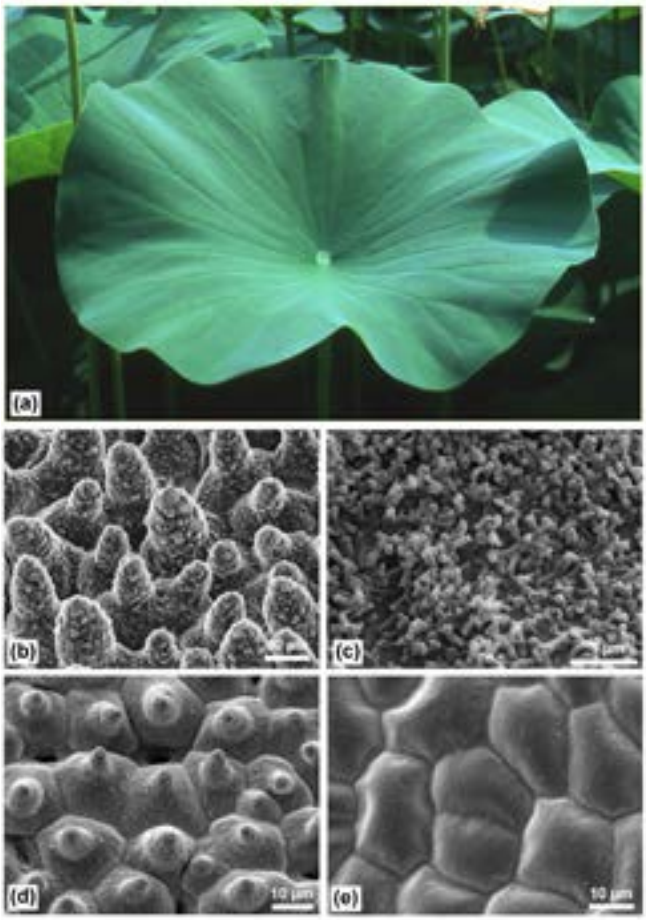
Varshitha Yashvanth (L) and Dr. Sazzadur Chowdhury's (R) nanoscale smart surface research is inspired by the water-repelling properties of lotus, myrtle spurge and cabbage leaves. Chowdhury's team aims to replicate the surface properties of the leaves using a nanoscale thin film to create "smart" nanoparticle based drugs that can react to changes in the body and selectively target cancer.

From a smart drug delivery system that can react to changes in the body or selectively target cancer to products that make roads safer, a $730,000 injection in government and industry funding to the University of Windsor will spur nanoscale smart surface research with sweeping benefits.

Funding recipient Dr. Sazzadur Chowdhury is an electrical and computer engineering associate professor and director of the university's Microelectromechanical Systems (MEMS) Lab. He said a government investment of $568,202 in addition to a $165,013 in-kind industrial contribution, will help put UWindsor at the forefront of the rapidly growing field of nanotechnology.

The funds will propel Chowdhury's research, which is inspired by the water-repelling properties of lotus, myrtle spurge and cabbage leaves. The researcher's team aims to replicate the surface properties of the leaves using a nanoscale thin film to create smart surfaces with tunable properties, such as wettability.

These surfaces can be used to create a "smart" nanoparticle-based drug that can respond to a change in blood pressure, cell wall elasticity, temperature, or pH range, unlike any time-released medication on the market.



(a) Lotus leaves exhibit extraordinary water repellency on their upper side. (b-e) Scanning electron microscopy (SEM) image of the upper leaf shows the hierarchical surface structure consisting of papillae, wax clusters and wax tubules.

Dr. Mehrdad Saif, UWindsor's dean of engineering, said the faculty has invested more than $3 million in its state-of-the-art cleanroom facilities and recently appointed Dr. Arezoo Emadi to an SPF50 faculty position in the MEMS area.

"The coating should allow the drug carrier to detect high blood pressure and increase the release rate of the medication, bringing the pressure under control faster," Chowdhury said about his initial research results that were published in the December 2016 issue of IEEE Nanotechnology Magazine.

Varshitha Yashvanth, a master's student working under the supervision of Chowdhury, said the microscopic size of the nanoparticle-based drug carriers helps the drugs escape the natural defense system of the body and penetrate and attack at a cellular level.

This technique can be further enhanced by manipulating the water-loving and water-repelling properties to help the nanoparticles differentiate between diseased and healthy cells based on the strength of the cell membrane.

"This will allow medicine like chemotherapy to target tumors and leave healthy cells alone," Chowdhury said. "The attack on healthy cells will be minimized, eliminating unwanted side effects."

An initial $284,101 provided by the Canadian Foundation for Innovation's John R. Evans Leaders Fund was matched by additional government funding. The investment will help the university set up a Class 100 cleanroom, a lab specially designed to control air pollutant levels, pressurization, temperature and humidity, and procure necessary equipment for nanoscale surface science research in the Ed Lumley Centre for Engineering Innovation.

Dr. Mehrdad Saif, UWindsor's dean of engineering, said the faculty has invested more than $3 million in its state-of-the-art cleanroom facilities and recently appointed Dr. Arezoo Emadi to an SPF50 faculty position in the MEMS area.

"These combined investments will allow us to further enhance our capabilities and spur Dr. Chowdhury's and Dr. Emadi's boundary pushing research in the design and characterization of nano- and micro-electromechanical systems," Dr. Saif said.

The MEMS team is hoping to produce results within the next five years. If successful, the innovative "smart" surfaces will have a wide range of health and automotive applications. For example, Chowdhury said the same water-repelling surface properties can be applied to asphalt or lane markings on the road to reduce the formation of black ice and improve lane marking visibility. WE

ALUMNI PROFILE

ALUMNUS RECEIVES ENGINEERS CANADA GOLD MEDAL AWARD

Don Mavinic poses in front of his research team's fourth-generation crystal reactor demo unit run by Metro Vancouver at the Annacis Research Centre on Annacis Island, BC. (Photo courtesy of the University of British Columbia)

"I HAVE FOND MEMORIES OF BEING AT THE UNIVERSITY OF WINDSOR," SAID MAVINIC. "WE WERE A NICE, SMALL GROUP OF LIKE-MINDED GRADUATES. WE CLICKED; WE SORT OF THOUGHT OF OURSELVES AS A FAMILY. WHAT I REALLY LIKED ABOUT IT IS THAT WE HAD A LOT OF FREEDOM TO DO THINGS. WE WERE ENCOURAGED TO THINK OUTSIDE THE BOX AND TO NOT BE AFRAID TO TRY SOMETHING NEW."

More than 50 year ago, engineering professors at the University of Windsor told Don Mavinic BASc '69, MASc '71, and PhD '73, to think outside the box and never accept the status quo.

Today, as the 71-year-old professional engineer nears retirement, he still lives by those words.

Mavinic's noteworthy career began in Windsor, Ont., when an interest in tinkering with his dad's gadgets in the garage and concern about the polluted Great Lakes led him to an education in sanitary engineering at UWindsor.

"I have fond memories of being at the University of Windsor," said Mavinic. "We were a nice, small group of like-minded graduates. We clicked; we sort of thought of ourselves as a family. What I really liked about it is that we had a lot of freedom to do things. We were encouraged to think outside the box and to not be afraid to try something new."

And Mavinic wasn't.

Don Mavinic receives the 2016 Engineers Canada Gold Medal Award for his contribution to the engineering profession, his community and the protection of the environment. (Photo courtesy of Engineers Canada)

During his long-standing career as a professor in the University of British Columbia's (UBC) Department of Civil Engineering, Mavinic received international acclaim for leading the development of a wastewater treatment technology that recovers and recycles phosphorus from municipal wastewater systems.

Phosphorus-rich runoff from municipal drains and agricultural activity has wreaked havoc on the Great Lakes, resulting in severe algal blooms that pose a risk to aquatic life and human health. The cost-effective system co-invented by Mavinic and his colleagues at UBC, removes phosphorus from waterways and recycles it into an eco-friendly, pellet form fertilizer.

In 2010, Mavinic received the Ernest C. Manning Innovation Award and the Natural Sciences and Engineering Research Council of Canada (NSERC) Synergy Award. The following year, he was given the Meritorious Achievement Award from the Association of Professional Engineers and Geoscientists of British Columbia. He is the only Canadian to be named a Water Environment Federation Fellow. In 2016, he received the Engineers Canada Gold Medal Award.

"They called me up and it just hit me like a ton of bricks. It didn't sink in for a couple of days," said Mavinic, who was chosen out of 290,000 professional engineers across the country and later inducted as a fellow of Engineers Canada.

Engineers Canada is the national organization of the provincial and territorial associations that regulate the practice of engineering in Canada and license the country's members of the engineering profession. The Gold Medal Award is given annually to an engineer who has carried out major achievements in Canada or on behalf of Canada.

"We were pleased to honour Dr. Mavinic with the Gold Medal Award in recognition of his contribution to the engineering profession, his community and the protection of the environment," said Engineers Canada CEO Kim Allen. "Don's innovation as an engineer and researcher has revolutionized how we treat wastewater, and his passion for the profession is inspiring the next generation of engineers."

Ostara Nutrient Recovery Technologies, a spin-off company based in Vancouver, commercialized and implemented Mavinic's technology at 15 wastewater treatment plants across North America and Europe. The technology hasn't made its way to Ontario where phosphorus discharge is still controlled with chemicals, but Mavinic is hopeful his environmentally-friendly system will soon be tested at demonstration sites in municipalities like Windsor.

Mavinic refers to former UWindsor professors, Jatinder Bewtra and Alex McCorquodale, as his mentors and credits them with having a major influence on his career. After completing his PhD, the trio patented a vertical wastewater treatment system that is still used in industrial wastewater treatments plants in Japan that require a small footprint.

"He was one of my best students; I really enjoyed working with him more like a friend than his teacher," said Bewtra, a Distinguished University Professor Emeritus in UWindsor's Department of Civil and Environmental Engineering.

Bewtra and Mavinic received a gold medal for their sanitary engineering research, which was later published in the Canadian Journal of Civil Engineering.

Meanwhile Mavinic continues his research. His latest project funded by NSERC strives to improve the diffusion of air in drinking water.

The engineer says it's important for engineers to give back to the community in other ways. For more than a decade, he and his wife Sue BScN '68 have volunteered at the Greater Vancouver Food Bank and collected toys during the holidays for the North Vancouver Firefighters' annual toy drive.

But perhaps Mavinic's biggest contribution lies within the hundreds of students he's trained — students he often reminds to think outside the box and never accept the status quo. WE

NEWS

UWINDSOR LAUNCHES ONTARIO'S ONLY WEEKEND MASTER OF ENGINEERING MANAGEMENT PROGRAM

Jennifer Côté, pictured in the Ed Lumley Centre for Engineering Innovation, says the skills she's acquiring in the University of Windsor's weekend Master of Engineering Management program are quickly transferable and beneficial to the daily situations of her professional career.

The Faculty of Engineering has partnered with the Odette School of Business to launch the province's first weekend Master of Engineering Management (MEM) degree.

The two-year program allows working professionals to earn a master's degree without interrupting their careers and prepares graduates for leadership and entrepreneurial roles in multinational engineering and technical enterprises.

"The majority who make it to the top of a company are the ones who have the elements of business and engineering combined," said Dr. Majid Ahmadi, UWindsor's associate dean of engineering research and graduate studies. "That's why we feel this is going to be an enabling program that prepares engineers to set up, run or lead a business."

Jennifer Côté, a corporate planning manager at ValiantTMS who was in the 2016 inaugural class, said the MEM program is an ideal fit for working professionals and that each course is tailored to real-life working situations that would arise in a workplace.

"The students in the class are all working professionals with technical backgrounds in engineering, which simulates real working conditions and allows for more dynamic learning through group discussion and brainstorming," she said.

"Working with engineers from different disciplines and backgrounds allows for alternate perspectives on the topics being discussed. Many of us come from diverse industries, which is a great learning experience to see similar and different issues arising in real-life situations."

In addition to core competencies in applied finance, administration, market research, engineering design and product management, students in the MEM program can focus their degree in the following areas: manufacturing strategy; operations management; project management; supply chain management; and entrepreneurship and innovation.

Dr. Beth-Anne Schuelke-Leech, a professional engineer who has co-founded three technology based businesses, is guiding the MEM students through the innovation process and helping them establish a link between industry, academia and policymakers. She believes the program will help students navigate the insecure work environment of today's world.

"The next wave of engineers is going to have to figure out how to be entrepreneurial—not just as in a start-up—but within a company," Schuelke-Leech said. "If you are not providing or demonstrating value, companies will not keep you around like they used to."

Schuelke-Leech joined the University of Windsor in 2016 as assistant professor of engineering management and entrepreneurship. She said she was attracted to the MEM program after speaking to faculty members and recognizing their commitment to diversifying the engineering curriculum and preparing students for the working world. "That's a very different approach to engineering and I found that very appealing," she said. WE

CIVIL ENGINEERING GRADS GIVE BACK IN CELEBRATION OF 50TH ANNIVERSARY

Members of the Class of 1967 during a visit to the University of Windsor campus: (L-R) Philip Waier, Joseph Cohoon, Henry Regts, David Strelchuk and Harold Horneck (Norm Becker not pictured).

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

Henry Regts BASc '67 says he owes a lot to the University of Windsor.

Admitted as a mature student to the civil engineering program, Regts said the education he received prepared him for a successful career in the profession. He helped to bring together several fellow graduates of the Class of 1967 for a tour of the Centre for Engineering Innovation.

"It's Canada's 150th year and our 50th year," he said. "We've only had one reunion in that time and to me it was a big deal graduating in 1967. You've got to celebrate these things."

The group was part of the inaugural class entering the University in 1963.

"We weren't as well-known as some of the bigger schools, but the engineering education I got was second to none," said Regts. "It's all in how you apply yourself to your studies."

He married and started a family while a student, and his wife was expecting their second child when he graduated. He recalled support he received from donors as being critical to completing his degree, and said that has motivated him to invest in future generations of students — members of the Class of 1967 have endowed a scholarship fund to commemorate the 50th anniversary of their graduation.

Provost Douglas Kneale told donors at a reunion breakfast Wednesday that their support matters.

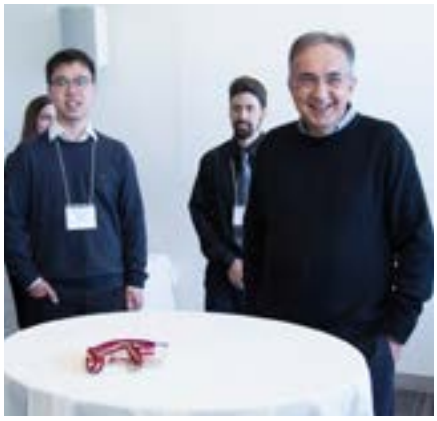
"Your gift will open doors and open minds for years to come," Dr. Kneale said.

Norm Becker BASc '67, PhD '70, founder of the Windsor-based Becker Engineering Group, said the gesture expresses gratitude to their alma mater.

"We have accomplished so much more than we ever expected in our 50 years of professional practice," he said. "Our successes reflect on the University — we're the products."

In addition to a welcoming breakfast and tour of labs and facilities, the alumni shared their experiences and expertise during a panel discussion with professor Jacqueline Stagner's Engineering and Society class. WE

SERGIO MARCHIONNE IMPRESSES ENGINEERING STUDENTS



Sergio Marchionne, the CEO of Fiat Chrysler Automobiles (FCA), meets with engineering students in the Windsor-Torino-FCA exchange program in the Ed Lumley Centre for Engineering Innovation during a visit to the University of Windsor campus.

When you meet with an executive at the helm of one the largest automakers in the world, you expect him to mainly talk shop.

At least that's what a group of automotive engineering students expected when they had a chance to spend time with Fiat Chrysler Automobiles CEO Sergio Marchionne on Nov. 17, 2016 at the University of Windsor. Instead, Dr. Marchionne fondly recalled his days as a UWindsor business student and told the eager graduate students in the Windsor-Torino-FCA exchange program to slow down and enjoy this "intellectually stimulating" part of their lives.

"You need to be much wider. Experience as much as you can," Dr. Marchionne said, stressing the importance of literature, philosophy and music. "Without them, you're dry."

In 2011, Marchionne helped establish the UWindsor-Politecnico di Torino dual degree automotive master's program, a first-of-its-kind joint degree agreement that allows students to complete two master's degrees from UWindsor and the Politecnico di Torino in Italy, while contributing to cutting-edge research and development projects at FCA.

Marchionne met with a small group of students in the program during a tour of the Ed Lumley Centre for Engineering Innovation.

"The Torino program had a huge influence on my life," said Ashley Lehman BASc '13, MASc '15 who landed a job as a studio engineer at FCA US LLC headquarters in Auburn Hills after graduating. "When I was looking for a master's program, I wanted to do something that was specifically paired with a real company because you get that actual experience."

Benedetto Giubilato, a Sicilian student who has one year left, said he was interested in learning about Marchionne's experience as a student.

"He said you have to build your character and you have to build it with many bricks—not just engineering," Giubilato said. "I mean, if Sergio Marchionne told me, it means it works."

Marchionne, a dual Canadian-Italian citizen, completed an MBA and a BComm at UWindsor. He is a barrister, solicitor and chartered accountant who majored in philosophy and received an honorary Doctor of Laws from UWindsor.

"I spent the best years of my life at this school," Marchionne said about his time on the UWindsor campus. WE

ONTARIO PROVIDES MILLIONS TO BOOST UWINDSOR-FCA AUTOMOTIVE RESEARCH

A portion of an $85.8-million grant given to FCA Canada by the Ontario government will enhance innovative research at the University of Windsor - Fiat Chrysler Canada Automotive Research and Development Centre (ARDC).

Premier Kathleen Wynne made the June 2016 announcement during a celebration of the 20-year partnership between UWindsor and Fiat Chrysler Automobiles (FCA) Canada. The automotive industry and academia partnership led to the inception of the ARDC in May 1996, marking the first of its kind in Canada.

"Collaboration between academia and industry is at the heart of innovative clusters around the world," said Dr. Alan Wildeman, president and vice-chancellor of the university. "The University of Windsor is proud of its 20-year partnership with FCA Canada in ARDC, the country's largest automotive research centre. As at every university and college in Ontario, we have researchers and creative minds that want to bring solutions to the challenges and opportunities that our province's industries are navigating. We are very grateful to the many ways in which the province is supporting that goal."

Wynne said the grant comes from the Jobs and Prosperity Fund. Nearly $17 million will support R&D at the ARDC while $69 million will fund advanced training for the workforce at the Windsor Assembly Plant and technology enhancements related to the production of the new Chrysler Pacifica Hybrid — a vehicle that includes advance powertrain and light-weighting technologies designed in part by UWindsor students.

"This partnership with Chrysler ensures that we are building the vehicles of tomorrow," Wynne said.

The ARDC has a direct role in the product design and engineering of nearly every product in FCA's portfolio. The facility conducts a wide range of research, including extreme weather testing, corrosion control, precision night-time headlight testing and rigorous testing that involves millions of kilometres of road test simulation.

The ARDC employs 180 people and nurtures a highly skilled labour pool of student engineers. More than 500 students have trained at the facility, many of whom have become permanent employees. WE

Premier Kathleen Wynne shakes hands with Alan Wildeman, president and vice-chancellor of the University of Windsor, after speaking at a funding announcement at the UWindsor-Fiat Chrysler Canada Automotive Research and Development Centre.

WINDSOR GIRL GUIDES EXPLORE SCIENCE AND ENGINEERING AT UWINDSOR

More than 60 Windsor and Essex County Girl Guides, ranging from Grades 3 to 8, earned recycling, bodyworks and physics badges by completing hands-on activities in the Ed Lumley Centre for Engineering Innovation.

Local Girl Guides added three new badges to their collection on March 11, 2017 at the University of Windsor's engineering and science-themed Badge Day.

More than 60 Windsor and Essex County Girl Guides, ranging from grades 3 to 8, earned recycling, bodyworks and physics badges by completing hands-on activities in the Ed Lumley Centre for Engineering Innovation.

Associate Professor Edwin Tam, the engineering faculty's assistant dean of student affairs, said the event encourages girls at an early age to look at the importance of science, engineering and technology in our society.

"It's so wonderful to get girls involved in STEM," said Taryn Matis, leader of the 107th Windsor Guides. "When the signup sheet came out for this event, the girls couldn't wait to sign up because they were so intrigued. A lot of my girls dream of coming to this university because of Badge Day."

Megan Leckie, 10, said she can see herself working in the fields of engineering or science when she's older.

"I just like making stuff," Leckie said. "I like science, too, because you get to do different activities. Today, I learned that skin is the biggest organ in our body and the femur is the longest and strongest bone."

Leckie especially enjoyed creating a kaleidoscope, replicating the functions of a lung with a water bottle and projecting her group's paper cut-out cat on the wall using mirrors and a light.

The troops also learned how to properly sort recyclable materials and test heart rates and used hard-boiled eggs to see how different substances can affect the enamel on your teeth.

"Science is important because it allows females to get involved in society and allows us to take roles within society that are important," said Stefanie Barcic, a fourth-year kinesiology student at UWindsor who helped run the bodyworks badge activities.

Girl Guide Badge Day is organized by the University of Windsor's Faculty of Engineering and Faculty of Science and sponsored in part by the Ontario Network of Women in Engineering and Let's Talk Science. WE

UWINDSOR ROCKETRY TEAM SOARS IN INTERNATIONAL COMPETITION

In its first-ever rocket competition appearance, the University of Windsor Rocketry Team finished third overall out of 82 teams.

Nine senior members of UWindsor's inaugural rocketry team traveled to New Mexico to compete in the Intercollegiate Rocket Engineering Competition's (IREC) 2017 Spaceport America Cup held June 20 to 24. While first and second place were announced at the competition, the 80 other participating teams had to wait more than a month for competition results.

"We were pretty ecstatic," says Liza DiCecco, a fourth-year materials option mechanical engineering student. "The results came right before our capstone report was due, when we were stressed out trying to finish. So this news made us pretty happy."

Event organizers were especially impressed with UWindsor's custom-made trajectory model the students created with MATLAB software. The team was one of 24 schools invited to present in a podium session during competition.

"Our trajectory model was well-received. They told us we had a good understanding of the fundamental physics of rocketry and our model would be a great resource for teams to come," DiCecco says. "We're going to be collecting flight data from other universities to calibrate our model and make it more accurate. Once it's complete, we'll share it with other teams."

UWindsor competed against 44 teams in a category that required students to design, build, and launch a rocket carrying a payload of four kilograms to a target altitude of 10,000 feet. Teams were awarded points based on written reports, a podium session and how close their rockets' maximum altitude was to the target. During competition, the UWindsor rocket reached 10,533 feet, which was within 3.8 per cent of the team's predicted altitude. UWindsor was one of the three leading schools to score in the 800-point range. The fourth-place team finished with 764 points out of 1,000.

The University of Windsor Rocketry Team finished third overall in its first-ever competition: (from left) professor Jeff Defoe, Liza DiCecco, Shannon Bosilac, Anthony Gudisey, Sam Randall, Michael Gyan, William Oudomsouk, Alexandra Rose, Patrick Pomerleau-Perron, Jonathan Schreiber.

Professor Jeff Defoe, the team's faculty advisor, says the students' achievement is extremely impressive, though not entirely surprising.

"The excellence in planning and execution displayed by the entire team throughout the project left little doubt in my mind that they would be extremely successful," he says. "Placing third out of 82 teams from around the world for a first-time entry is something these students, the department, the faculty and the university should be extremely proud of."

Junior members of the rocketry club plan to compete again next year with the help of some graduating members who have said they will advise and assist in their spare time. DiCecco said the team can score more points for custom making components, like the rocket's body tubing, nose cone and parachute.

"It was an unbelievable experience," says Shannon Bosilac, a mechanical engineering student in the aerospace option. "Seeing rockets is an experience in itself, but being able to actually go there and launch our own rocket was a dream. I never imagined I would be able to go and launch my own rocket." WE

UWINDSOR RANKED NUMBER ONE AMONG THE COUNTRY'S RISING UNIVERSITIES

The Huffington Post has named the University of Windsor the number one university to watch in Canada.

Based on the Canadian University Rankings, Huff Post selected five universities it considers to be "Canada's Rising Stars".

The publication says the institutions named already have a lot to offer and promise to become household names in the near future. The online news site cited UWindsor's investment in infrastructure, programs, and research among the reasons for its inclusion in the list:

"UWindsor is growing not only in enrolment and endowment, but also in size and scope of programs. The institution has invested hundreds of millions of dollars into new buildings, programs, and research over the past year.

Last year, they secured an $85.8-million grant from the Ontario government to enhance innovative research at the UWindsor-Fiat Chrysler Automobiles Canada Automotive Research and Development Centre.

More recently, they secured $30 million in funding to construct a new Science Research and Innovation Centre, where students, teachers, and researchers will have an incredible space for creativity and collaboration."

Other major investments include $75 million for social work, dramatic arts, music and creative arts programs; a $112 million engineering school; a $30 million parking garage; and an $8.4 million welcome centre and Joyce Centre for Entrepreneurship. WE

Luigi Zanettin and his wife, Silvana Rotulo, are pictured on vacation in Collingwood, Ont. A University of Windsor memorial scholarship has been established in Zanettin's name.

The University of Windsor and the Zanettin family would like to extend a heartfelt thanks to everyone who donated to the Luigi Zanettin Memorial Scholarship. A sincere thanks to Roger Zanettin, Silvana Rotulo, Dr. Jacqueline Stagner, Dr. Bill Altenhof & family, the Windsor Firefighters Benefit Fund, Dave & Barbara Bjarneson and Gary & Janice Inkratas for making this inspiring memorial gift possible.

Donations are still being accepted for the Luigi Zanettin Memorial Scholarship. To make a gift to the University of Windsor in memory of Luigi, please contact Katie Mazzuca, Major Gift Officer at 519-253-3000 ext. 5959 or Katie.mazzuca@uwindsor.ca.

SCHOLARSHIP KEEPS STUDENT'S LEGACY ALIVE

MOST PEOPLE SAY THEY'VE NEVER MET ANYONE QUITE LIKE LUIGI ZANETTIN.

AS A SON, HE ALWAYS CARVED OUT TIME TO FISH AND HUNT WITH HIS DAD AND ONCE GAVE UP SIX MONTHS' WORTH OF SATURDAYS TO HELP HIS FATHER REFURBISH A FIRE TRUCK FOR FIREFIGHTERS IN AFRICA.

AS A HUSBAND, HE BOUGHT HIS WIFE FLOWERS EVERY WEEK AND WORKED TWO JOBS WHILE ATTENDING SCHOOL SO THEY COULD BUILD A FUTURE TOGETHER.

AS A STUDENT, HE NEVER MISSED CLASS AND HIS CURIOSITY DRIVEN QUESTIONS PROPELLED HIM TO THE TOP OF HIS PROGRAM. EVEN AFTER HE WAS DELIVERED A BLOW IN 2013 WHEN HE FOUND OUT HE HAD A RARE FORM OF CANCER, HE NEVER SLOWED DOWN.

Zanettin fought the aches and pains, the weight loss and weakness from radiation and chemotherapy. His rhabdomyosarcoma—a disease that causes cancer cells to form in muscle tissue—caused vision loss and weakness that left him dependent on a cane.

"We were just lost, completely lost. But he didn't let it slow him down," said Silvana Rotulo, Zanettin's wife. "A lot of people thought he should take a leave of absence from school. He said it was the only thing he had control of."

Zanettin, determined to finish his Master of Applied Science (MASc) degree, would bring his laptop to the cancer clinic during chemotherapy treatments and later, to hospice, when he was too weak to stay at home. Weeks before he passed away peacefully surrounded by family and friends on July 10, 2014, UWindsor president Alan Wildeman visited The Hospice of Windsor & Essex County Inc. to confer Zanettin's MASc degree.

"Luigi brought two extraordinary gifts to the University of Windsor. One was his talent and dedication as an outstanding student. The other was how he taught us to never cease pursuing our dreams, no matter what obstacles we face," Wildeman said. "Conferring a master's degree on Luigi in the presence of his family and friends was something I will never forget."

Rotulo called the mini convocation "incredible."

"He was so happy. I've never seen him so humble and proud at the same time. He wanted that master's degree so badly and he didn't want to give up. His willpower was like this unbelievable force."

Zanettin's drive and devotion to his education prompted Professor Jacqueline Stagner to establish a scholarship in his name. Donations came flooding in from family, friends and people who were touched by Zanettin's story and in less than four months, the $25,000 required for endowment was reached. Starting in fall 2017, a $1,000 Luigi Zanettin Memorial Scholarship will be given annually to a student who transfers from an advanced technology diploma at a college to an undergraduate engineering program at UWindsor — the same academic path Zanettin took. Preference will be given to a student who, like Zanettin, exhibits leadership skills and is highly motivated.

Zanettin's father, Roger, said he was moved when he found out about the memorial scholarship and the outpouring of support that followed. He said his wife, Sharon Zanettin, who passed away six months after Lou's death, would've been so proud.

"It's nice to keep Lou's name alive," he said about his only child. "He couldn't have been a better son. He was a perfect kid, he just was."

After graduating from St. Clair College with a diploma in Mechanical Engineering Technology-Automotive Product Design, Zanettin attended UWindsor to pursue a bachelor and master's degree in mechanical engineering. Throughout his years of schooling, Luigi worked in Stuttgart, Germany with GoTech, completed a co-op placement with FCA Canada in Windsor and taught as a graduate assistant.

While completing his MASc degree, he designed a complex, comprehensive computer model that helps automotive engineers understand how children are affected during side impact collisions. His contributions to child safety have been published in the International Journal of Crashworthiness and presented at an international conference — achievements few MASc students attain, according to professor Altenhof.

Zanettin also surpassed several professors' expectations when he led a team in the design, development and construction of a Hopkinson's Split Pressure Bar Apparatus. This piece of equipment — rarely seen and unique to only a few institutions — uses ballistics and sophisticated structures and transducers to analyze how materials behave during high-speed impacts. Altenhof said the application of the equipment is sought after by industry and will continue educating UWindsor students for years to come.

When Roger Zanettin's colleagues at Windsor Fire & Rescue Services learned about the scholarship, they knew they wanted to help.

"We're a family. When someone loses a child, you're there to help in any way you can," said Jim Romanko, a fireman and chair of the Windsor Firefighters Benefit Fund. "When I heard they wanted to come up with something to ensure Lou's name lives on in a field that he gave so much to in such a short time, we had to be a part of it."

Through individual donations, chili cook-offs and bingos, the charity branch of the Windsor Firefighters raised $6,000. Several of Roger's colleagues even showed up at hospice for Zanettin's convocation with a big sign strung across a firetruck that said "Congratulations, Lou!"

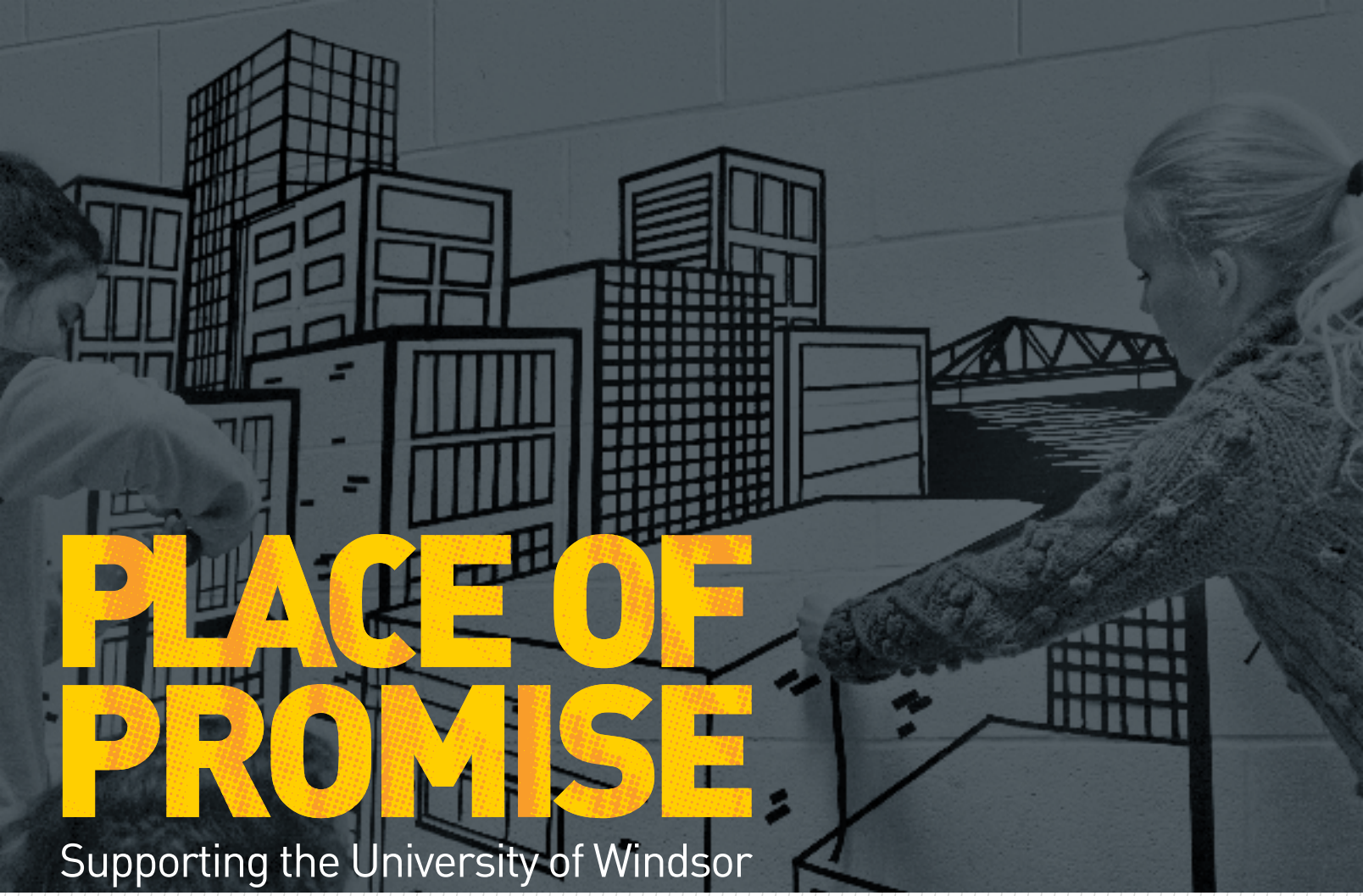
Romanko recalls the funeral and seeing very few dry eyes — firefighters included.

"It was one of the most emotional events I've ever been to," he said. "When they celebrated his life and explained everything that he had done and what he was up against, the battle and everything, you couldn't help but be inspired." WE

"When he had every reason to say I've had enough, he fought against it," said Dr. Bill Altenhof, a University of Windsor mechanical and materials engineering professor who mentored the 27-year-old through graduate studies. "He just simply would never quit; I was awestruck by his level of determination."

Luigi Zanettin works on a Hopkinson's Split Pressure Bar Apparatus he helped design and build at the Ed Lumley Centre for Engineering Innovation.

Dr. Bill Altenhof, Silvana Rotulo and UWindsor president Alan Wildeman pose with Luigi Zanettin during a special convocation ceremony held for Zanettin at The Hospice of Windsor & Essex County Inc.



PLACE OF PROMISE

Supporting the University of Windsor

GIVE TO THE FACULTY OF ENGINEERING

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.

1. Experiential Learning: Going Beyond the Traditional Classroom

Investing in state-of-the-art laboratories ensures that students are learning with the most advanced technology and equipment. Bringing theory into practice, such hands-on learning and experiential education activities as capstone design projects help students gain the skills they need to successfully transition to industry.

2. Scholarships: Increasing Access and Opportunity

Undergraduate and graduate scholarships attract top students, financial awards recognize student leaders, and bursaries assist those with financial need. By investing in scholarships, you will help engineering students succeed and reach their full potential.

3. Research: Driving Engineering Innovation

Our faculty, departments, and graduate students are developing creative engineering solutions for challenges faced by today's society. Make an impact by supporting advanced research. Select one of our innovative research groups or projects, or further invest in endowed Research Chairs to build on our existing strengths and provide enhanced training, unique expertise and international perspectives for our students, faculty, industrial partners, community, and beyond.

4. Dean's Innovation Fund

Gifts to the Dean's Innovation Fund are undesignated to support projects with the greatest funding need, in real time, to foster innovation. This unique funding opportunity allows us to be proactive to challenges and opportunities as they arise. Donations will support all engineering departments, programs, infrastructure, and extracurricular student groups, including the Engineering Student Society, Women in Engineering, Engineers Without Borders, and more!

THANK YOU to our thousands of alumni, parents and friends who support the Faculty of Engineering each year. Your gifts have a lasting impact for generations to come.

Learn more about how you can invest in our future engineers and innovators at **www.placeofpromise.ca** or contact Katie Mazzuca at katie.mazzuca@uwindsor.ca.

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