

OFFICE OF  
**RESEARCH SERVICES, INNOVATION  
AND ENTREPRENEURSHIP**





 DURHAM COLLEGE  
SUCCESS MATTERS





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## DEAN'S MESSAGE

I am pleased to present this annual report, outlining the contributions of the Office of Research Services, Innovation and Entrepreneurship (ORSIE) in 2016-2017. ORSIE had a busy and productive year, as we continued to grow and enhance the college's research capacity.

Through ongoing engagement with industry and community organizations, and by supporting faculty in high-quality and impactful projects, the applied research team secured a position among the top 50 research colleges in Canada for the fourth consecutive year. I am very proud of this achievement and the contributions of our highly skilled and knowledgeable faculty researchers and employees.

Highlights from the year include the work done by ORSIE's Institutional Research and Planning (IRP) team to develop the Durham College 2016 Environmental Scan. This tool became critical in informing the efforts of the college's Enrolment Advisory Committee, while also supporting the development of the goals and objectives of the enrolment management plan. The IRP team has continued to deliver valuable, timely and accurate reports for decision-making.

The FastStart team also had a successful year as they developed new tools to support entrepreneurs, assisting more students than ever. They also oversaw the memorable launch of Durham College's first Enactus team, which presented at both the regional and national expositions, demonstrating the members' passion and commitment to worthy social endeavours.

As a leading post-secondary institution, Durham College values and recognizes the importance of all research and scholarly activities. Whether achieving higher education, addressing a challenge encountered by an external partner or acquiring research skills and opportunities that ultimately benefit students, this report recognizes the substantial contributions and many exploratory and scholarship activities, both unfunded or supported by grants, that contribute to the college's applied research success.



**Debbie McKee Demczyk**  
Dean, ORSIE



# THE TEAM

## ORSIE EMPLOYEES

- Debbie McKee Demczyk, dean, ORSIE
- Joshua Gerrow, junior research analyst, Institutional Research and Planning
- Chris Gillis, manager, Applied Research Business Development
- Rashmi Gupta, manager, Institutional Research and Planning
- Matthew Hack, labour market researcher
- Jane Hilton, project manager, Grants and Special Projects
- Shelley Irving, project co-ordinator
- Dr. Shafiqul Islam, project co-ordinator
- Lindsey Jeremiah, entrepreneurship coordinator, FastStart
- Megan Parker, finance and ethics compliance co-ordinator
- Kyle Paul, research and planning analyst, Institutional Research and Planning
- Stefanie Serio, research analyst
- Samantha Sinclair, research and planning analyst, Institutional Research and Planning
- Dr. Vibha Tyagi, manager, Applied Research Partnerships
- Sophie Yan, labour market researcher

## RESEARCH COORDINATORS

- Danny Aniag, professor, School of Business, IT & Management
- Linda Cheng, professor, School of Media, Art & Design
- Vlad Chiriac, professor, School of Justice & Emergency Services
- Lorraine Closs, professor, School of Health & Community Services
- Greg Moran, professor, School of Skilled Trades, Apprenticeship & Renewable Technology
- Pravin Patel, professor, School of Science & Engineering Technology
- Dr. David Smith, professor, School of Interdisciplinary Studies

## RESEARCH ADVISORY COMMITTEE

Debbie McKee Demczyk	Dean, ORSIE
Danny Aniag	Professor, School of Business, IT & Management
Kevin Baker	Executive dean/principal, School of Skilled Trades, Apprenticeship & Renewable Technology
Maureen Calhoun	Associate dean, School of Science & Engineering Technology
Linda Cheng	Professor, School of Media, Art & Design
Vlad Chiriac	Professor, School of Justice & Emergency Services
Lorraine Closs	Professor, School of Health & Community Services
Anna De Grauwe	Career coach, Career Development
Chris Gillis	Manager, Applied Research Business Development, ORSIE
Jane Hilton	Project manager, Grants and Special Projects, ORSIE
Dr. Judeline Innocent	Executive dean, School of Health & Community Services
Matthew Jelavic	Professor, School of Science & Engineering Technology
Barbara MacCheyne	Chief financial officer
Marianne Marando	Executive dean, School of Business, IT & Management
Greg Moran	Professor, School of School of Skilled Trades, Apprenticeship & Renewable Technology
Megan Parker	Finance and ethics compliance coordinator, ORSIE
Pravin Patel	Professor, School of Science & Engineering Technology
Susan Smikle	Manager, Insurance & Risk Management
Dr. Vibha Tyagi	Manager, Applied Research Partnerships, ORSIE

## RESEARCH ETHICS

All research involving human participants, under the auspices of Durham College, must be reviewed and approved by the college's Research Ethics Board (REB). The REB ensures the research is conducted in a way that is ethically responsible and complies with relevant standards and guidelines.

### Research Ethics Board:

- Kay Corbier (chair) – School of Health & Community Services
- Jordanne Christie – Centre for Academic and Faculty Enrichment
- Virginia Harwood – School of Justice & Emergency Services
- Dr. Lynne Kennette – School of Interdisciplinary Studies
- Terri Korkush – Community member
- Fabiola Longo – School of Health & Community Services
- Alexandra Penn – School of Interdisciplinary Studies
- Dave Rogers – Human Resources (to August 2016)
- Keri Semenko – School of Health & Community Services (from August 2016)

In 2016-2017, the REB reviewed 23 research ethics applications; 21 were approved and two were withdrawn. As in previous years, the majority of the applications were focused on research related to education (20). Two were social-sciences related and one was course based. Just over half of the applications (14) originated from Durham College researchers and external researchers submitted nine applications.

The majority of research undertaken by the researchers was unfunded (13). Six were funded internally and the remainder were funded by other organizations, including the Ministry of Advanced Education and Skills Development.

Over the course of the year, the REB received 18 completion reports, nine requests for renewals, eight research application amendments and one request for use of secondary data.

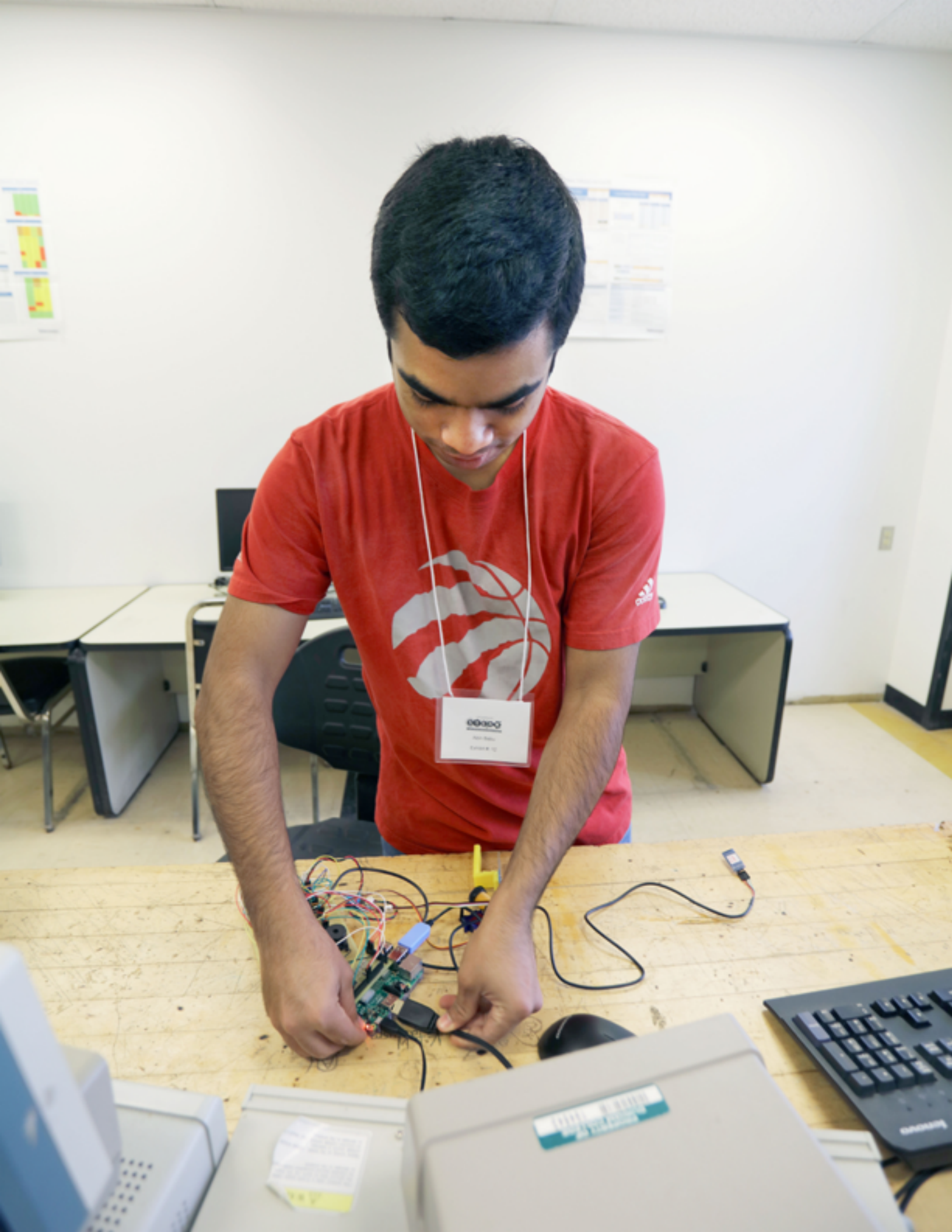
Kay Corbier, REB chair and Durham College faculty, and Megan Parker, finance and ethics compliance coordinator, attended the Canadian Association of Research Ethics Boards conference that took place in Toronto in May 2016. Topics included quality assurance versus research and internet research.

In June 2016, several board members also attended the Colleges Ontario Heads of Applied Research REB Professional Development Day. Sessions covered course-based research and research ethics case studies.

In addition, in September 2016, Durham College agreed to participate in the Ontario Colleges Multi-College Ethics Review Process (Expert REB Panel). The Expert REB Panel streamlines ethics review for researchers by reviewing multi-college ethics applications that are minimal risk and providing a recommendation to the respective college REBs, which are responsible for making the final determination.

Durham College also signed a reciprocal REB review agreement with the University of Ontario Institute of Technology (UOIT) in September 2016, that allows researchers who are conducting a joint research project between the college and UOIT to apply only to their own institution for ethical approval. This board will act as Board of Record when reviewing the ethics application.





## FEATURED RESEARCHER — DR. MICHAEL WILLIAMS-BELL



Dr. Michael Williams-Bell is a full-time faculty member in Durham College's Fitness and Health Promotion program within the School of Health & Community Services. He is also a strong advocate for research. In addition to teaching

Health Promotion in Diverse Populations, Fitness Assessment, Personal Training and Research Applications and Techniques, he has also worked on several research proposals, as the principal investigator or in collaboration with other researchers in Canada, Australia, Ireland and the United States.

For the past 12 years, Dr. Williams-Bell's focus has been on applied research in kinesiology, an interest that began while completing his Master of Science at the University of Waterloo. There he studied air management for firefighters in large- structure scenarios (high rises, box stores, subways). Those studies continued as he was completing his PhD in applied bioscience at the University of Ontario Institute of Technology (UOIT).

His research now focuses on two particular aspects of occupational physiology: determining the best approaches for making health and safety improvements in physically demanding occupations and determining the effect of external environmental stressors on physiological responses. This could mean researching emergency first responders and the impact of their environmental stressors or studying bakers who work in high-heat environments, both of which result in an increased physiological demand on the workers. Based on Dr. Williams-Bell's findings, it was determined that education training methods could be modified to improve resiliency for these "occupational athletes" so they are able to respond and adapt better to the encountered physiological stresses.

While at Durham College, Dr. Williams-Bell has examined the impact of heat stress on cognitive function in firefighters. He has also helped develop an Environmental Stress Workshop in collaboration with the Firefighter – Pre-Service, Education and Training program and the Automotive Centre of Excellence climate chamber at UOIT. The goal is to provide experiential learning opportunities for firefighter students by generating extreme environmental conditions for victim search and rescue, roof ventilation and dynamic CPR training. This workshop is the only one of its kind for students in Canada and allows firefighter students to enhance their skills, while also learning how their body responds under environmental stressors.

Students in the college's Fitness and Health Promotion program also gain hands-on experience during the workshop, as they are responsible for monitoring each participant's physiological responses. By working with Dr. Williams-Bell, they learn how to use state-of-the-art tools and equipment to collect the data.

In their role as research assistants, students help with workshops and learn to incorporate the health and safety aspects of firefighter service into their knowledge and skill set. A Fitness and Health Promotion student was hired to help develop experiential learning videos and collecting physiological data for the Internal Research Fund project.

As a researcher in a niche field, Dr. Williams-Bell is continually motivated to cultivate new knowledge that will have a positive impact on his area of focus. He is currently involved in two projects, one of which is funded by the Durham College Internal Research Fund, examining the effects of heat stress on cognitive function using serious game technology in firefighter students, and the second by the joint Durham College-UOIT Innovative Initiatives Fund, examining the physiological responses between live fire and simulated scenarios.

**APPLIED RESEARCH IN THE FIELD OF FIRST RESPONDERS IS HUMBLING AND EXTREMELY REWARDING. STUDENTS HAVE THE OPPORTUNITY TO PLAY A ROLE IN EMERGENCY SERVICES HEALTH AND SAFETY AND CONTRIBUTE TO A GREATER UNDERSTANDING AND IMPROVEMENT IN TRAINING TO REDUCE INJURIES AND FATALITIES IN THE PROFESSION.**

**DR. MICHAEL WILLIAMS-BELL**

In addition, he is involved in developing proposals for seven externally funded opportunities with academic and industry partners, including the Natural Sciences and Engineering Research Council of Canada Engage, the Ministry of Labour, the Social Sciences and Humanities Research Council of Canada and the College Social Innovation Fund.

Dr. Williams-Bell has also taken part in collaborative research through global partnerships with faculty at post-secondary institutions around the world, including St. Francis Xavier College in Antigonish, Nova Scotia, Brock University in St. Catharines, Ontario, the University of Montana, Limerick Institute of Technology in Ireland and Deakin University in Australia. In 2016, he was awarded the American College of Sports Medicine's Environmental and Occupational Physiology Interest Group PhD Award at its annual meeting in Boston, MA.

# ENTREPRENEURSHIP

## FASTSTART

FastStart is an extra-curricular program that provides student entrepreneurs with tools and resources to help them develop and launch their own business ventures.

Working directly with business mentors, coaches and peers in the VIBE, Durham College's on-campus entrepreneurship centre, FastStart participants create solid business models, design marketing assets, build product prototypes, websites and e-commerce platforms, and explore funding opportunities through a well-established network of community partners.

Over the past year, the FastStart program realized the following accomplishments:

- Launched the IdeaEngine course on the Learning Management System, with 70 registered students as of April 2017.
- Achieved a program participation growth rate of 55 per cent.
- Established a retail partnership with Parkwood Estate Gift Shop that allows student entrepreneurs to sell their products onsite.
- Received an invitation to Queen's Park to showcase FastStart student companies at Colleges Ontario Youth Creativity Zone.
- Celebrated four FastStart student company winners in Durham Region business pitch contests.
- Successfully piloted a FastStart field placement experience with a Durham College student to develop his innovative business idea.
- Proudly assisted three FastStart student entrepreneurs to launch successful, revenue-generating businesses: RÜTS Cosmetics, Ohh Products and Allan Pens.





## ENACTUSDC

In 2016-2017, the FastStart team also introduced EnactusDC, a student-driven, social entrepreneurship program.

In their rookie year as official Enactus Canada members, EnactusDC launched two successful team projects. The first, Project YO (Youth Opportunities), operates in partnership with Ontario Works to help Durham Region's at-risk youth transition to college and achieve success. The second project, We Grow Food @ School, is a passive solar greenhouse venture and education initiative that operates in partnership with Durham Region high schools to help teach community youth about food security and new paradigms in food and farming.

In their first year of operation, EnactusDC achieved the following successes:

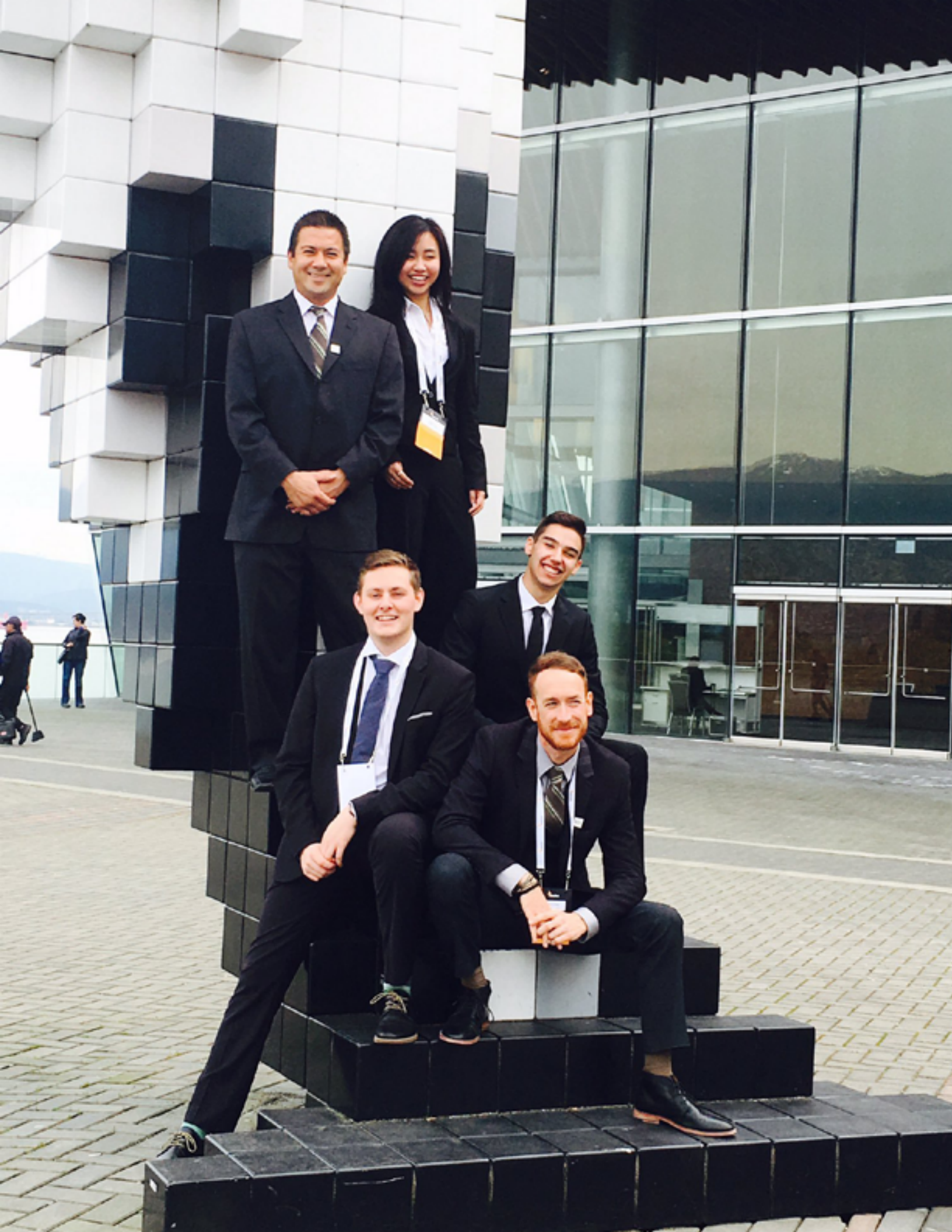
- Tied for third place in the EcoLiving Challenge category at the Central Canada Regional Competition in Toronto on March 9, 2017.
- Received the 2016-2017 Enactus Canada Rookie Team Award.
- Entrepreneurship professor Jay Fisher (faculty advisor) was awarded the Enactus Canada Rookie Faculty Advisor of the Year Award.
- Entrepreneurship Coordinator Lindsey Jeremiah (staff advisor) and Entrepreneurship Professor Jay Fisher were inducted as 2017 John Dobson Enactus Fellows.
- Competed at the Enactus Canada National Championships in Vancouver on May 12, 2017.

Throughout 2016-2017, the FastStart team exceeded their goals for the year, introduced new and improved programming and celebrated a variety of successes achieved by their student entrepreneurs in both the FastStart and Enactus programs.

## FASTSTART: STUDENT SUCCESS

- Influenced by growing up with a lactose allergy, Brittany Charlton, a Paralegal student and graduate of the Law Clerk Advanced program, channeled her inner entrepreneur to create healthy products for those with dietary restrictions. The result was Ohh Products, a coast-to-coast company dedicated to creating food that tastes great and is made with 100-per-cent natural, lactose-free ingredients.
- Rachel Enright, a computer-programming student, launched RÜTS Cosmetics, her e-commerce, cruelty-free makeup company. Locally made, RÜTS is an indie brand that now sells internationally, bridging the gap between ethically made cosmetics and luxury formulation, inviting everyone to "always stay true to your RÜTS."
- Ryan Cullen and Ryan Koyanagi, both graduates of the Horticulture – Food and Farming program, created their company City of Greens, a 1.5-acre diversified, agro-ecological market garden and urban farm enterprise. City of Greens strives to provide high-quality, fresh, local vegetables in an urban farm setting using regenerative and agriculturally efficient farm practices. The company hopes to grow into a viable sustainable farm hub, offering education and opportunities for aspiring farmers while connecting with community through social enterprising and specialty events held onsite.
- Paul Canivet, a student from the Mechanical Engineering Technician program, launched Allan Pens, creating unique, handmade wood products and currently offers customized wooden pens that feature unique details like patterns and company logos.





# APPLIED RESEARCH

## ANNUAL RESEARCH DAY

ORSIE hosted its sixth annual Research Day on April 28, 2016, highlighting faculty and student researchers' applied research and innovation projects, together with local business and community partners.

Dr. Darren Levine, manager of the Innovation and Research Unit, Commissioner's Office in the Social Services Department at The Regional Municipality of Durham, delivered the keynote address, stressing the importance of employers giving employees the courage, space, tools and resources to share their ideas. By unlocking their creative potential, employees can realize possibilities for change, improvement and research.

Oshawa-based start-up Inventing Future Technology Inc. (IFTech) was also on hand to unveil As Real As It Gets (ARAIG), their wearable gaming suit that immerses individuals into the reality of their gaming world. The result of a collaborative venture between IFTech, the Spark Centre and Durham College, with funding provided in part by the Ontario Centres of Excellence, the suit benefited from each parties' applied research expertise. After several rounds of development, the founders went on to secure a \$500,000 deal on CBC's Dragons' Den.

The following students received Outstanding Student Researcher awards:

- First place – Andrew Prandovszky, Electronic Engineering Technology, third year
- Second place – Alison Mitchell, Social Service Worker, second year
- Third place – Samander Mirzad, Electronics Engineering Technology, third year

Several faculty members were also honoured for their work in promoting applied research:

- Vlad Chiriac, School of Justice & Emergency Services
- Clair Cornish, School of Skilled Trades, Apprenticeship & Renewable Technology
- Fabiola Longo, School of Health & Community Services
- Anna Augusto Rodrigues, School of Media, Art & Design
- Dr. Ali Taileb, School of Science, Engineering & Technology
- Keri-Ellen Walcer, School of Business, IT & Management





## STUDENT ENGAGEMENT IN APPLIED RESEARCH



Since coming to Durham College in 2014, professor Amit Maraj has been the principal investigator in 15 externally funded research projects. With a degree in Information Technology Security, he is often sought out for his skills in leading IT-related projects.

As the demand for his expertise grew, so did the need to find capable and engaged student research assistants to work alongside Professor Maraj on his projects. However, finding those assistants was a time-consuming endeavour; the interview process was lengthy and there was no mechanism available to quickly determine the students' capabilities, which became problematic.

As the number of new projects increased, it became critical to find a better way to assess and select suitable research assistants. To solve this problem Professor Maraj developed a unique strategy to engage, train and prepare students to become Research assistants: a boot camp.

Created with the goal of giving students with an interest in applied research the opportunity to learn modern web development skills, which would contribute to their future success as a research assistant, the boot camps also give Professor Maraj the chance to interact with students interested in experiential learning.

Each boot camp consists of 15 assignments that are evaluated based on how well the code is written and the initiative demonstrated by each participant. Throughout the boot camp, students rely on their creativity, work as a collaborative team and gain practical, hands-on experience. When all the assignments are completed, each participant is left with a fully functional web application (full-stack web development) that they developed as well as an increased aptitude for problem solving.

The results have been very encouraging. Of the 19 students who enrolled in the first boot camp, 12 completed all of the assignments and went on to receive a position as a research assistant. Professor Maraj plans to introduce two more boot camps on artificial intelligence and data science in the future and hopes to issue students a digital badge upon their completion so students can visually acknowledge their accomplishments.



## THE AI HUB

Artificial intelligence (AI), in its many applications, is transforming how management decisions are made, products are developed, services are delivered, and customer engagement occurs. Training of AI systems is replacing programming, and intelligence-based products and services are rapidly becoming the expected norm for consumers and business users alike. AI is the broad domain that includes machine learning, expert systems, natural language processing and many other fields. After 60 years of research and experimentation, AI has shifted from an “interesting field of study” to a top driver of global economic growth and a strategic priority for almost every firm and industry.

The Durham College Hub for Applied Research in Artificial Intelligence for Business Solutions (the AI Hub) builds upon the lead Canada has established in AI by ensuring this emerging and vital competitive advantage for business can be understood, developed and adopted by Ontario’s small and medium-sized enterprises (SMEs).

The AI Hub researches how “narrow AI” is used to help SMEs uncover business insights while providing intelligent and autonomous solutions that increase a company’s productivity and growth. Narrow AI is any software that uses technologies such as machine learning, decision support, natural language processing and automation to recommend strategic options, autonomously make decisions and act in a manner that would be considered intelligent. Students gain highly sought skills and experience that improves their competitiveness in a challenging employment market.

Durham College is well positioned to grow as a leader in helping companies to develop and adopt AI solutions. A high-performance computing lab was established in 2017, including a large-capacity GPU-based computer system, for teaching and research applications in machine and deep learning. It is expected that students trained in this lab will bring advanced practice to projects with local businesses. Through new and existing industry relationships the AI Hub is able to offer expertise and access to industry-leading, domain-specific AI platforms that address a variety of business-use cases that are undertaken in industry projects.

# AI/HUB

The AI Hub is prioritizing three themes within its research efforts:

- **Implementing AI techniques in business solutions.** The creation of AI solutions that improve a business’s operational efficiency, competitiveness and productivity.
- **AI Solutions for health care.** The creation of AI solutions that enhance care, predict patient behaviour and prescribe caregiver response within the broader health care system.
- **Methods for the planning, implementation and management of AI systems.** The methods, processes, templates and administrative practices required to plan for, develop and implement AI systems that operate as part of a solution that creates business value.

**THE RESEARCH WE ARE UNDERTAKING ADDRESSES A SIGNIFICANT NEED FOR SMES ACROSS OUR ECONOMY. WE KNOW THERE ARE MANY BARRIERS AS TO WHY THE SMES HAVE BEEN SLOW TO ADOPT AI TO ADDRESS BUSINESS CHALLENGES. OUR HOPE IS THAT THROUGH COLLABORATIVE RESEARCH, AND THE IMPLEMENTATION OF ADVANCED SYSTEMS, WE CAN HELP THE SMES OF SOUTHERN ONTARIO BECOME MORE COMPETITIVE IN OUR INCREASINGLY DIGITAL ECONOMIC LANDSCAPE.**

PROFESSOR MIKE SPARLING

AI is transforming how enterprise and consumer systems are developed. The urgency to move decision-making from instinctive to data-driven has been growing for many years. Transparency has become important in regulated industries, and so has traceability for its role in understanding events after they have transpired. Business leaders, chief executive officers, shareholders and service providers are all in search of ways to identify, create, capitalize and sustain competitive advantage. AI is allowing a shift in value to the edge of the business network by empowering customers, engaging staff and systems in ways never possible in the past. Through the applied research underway within the AI Hub, Durham College, our faculty, staff, students and graduates, are working to create and prepare for an AI-enhanced future.









## CRAFT BREWING AT DC

### The explosion of craft brewing

Craft beer is in the midst of a worldwide renaissance; a global movement where brew makers are experimenting with new flavours leading to a growing market. In 2012, Ontario's craft beers led LCBO sales in all categories with nearly 45-per-cent sales growth. This is consistent with a record 53-per-cent increase in the sale of craft beer from 2010 to 2011. In fact, the Ontario Craft Brewers estimates that craft brewers have an annual \$300-million economic impact on Ontario and support over 600 direct jobs, which is approximately 20 per cent of the total employment in the province's brewing industry.



### Industry challenges

As the craft beer industry grows, brewers are encountering a number of challenges:

#### Yeast

Beer, in its basic form, is made from malted barley, hops, water and yeast – the latter often considered its most important ingredient. Why? Yeast is a single-celled organism that metabolizes, reproduces, and lives off the ingredients in the wort (the liquid produced during the brewing stage). In doing so, it converts the sugars in the wort to ethyl alcohol and carbon dioxide gas, giving the fermented beer both its alcohol content and carbonation, as well as other flavour-active compounds.

Although it is yeast that transforms the brew into the desired beer, many craft brewers do not understand the full function of this key ingredient. Knowledge about optimal storing and handling conditions can also be lacking, which causes problems because surrounding environmental conditions can affect a particular yeast strain's health, and ultimately, its fermentation performance.

Particular yeast strains also respond differently in those varying environmental conditions, which can affect a brewer's ability to produce certain key beer flavour compounds consistently, in desirable amounts. This in turn affects beer flavour, development and flavour stability. Many smaller craft breweries have neither the equipment nor the in-house expertise to perform the required assessments to address these challenges.

## Experimentation

While founded on traditional methods, craft-beer making is often distinguished by breweries that push boundaries by creating innovative flavours, aromas and beer styles. Craft brewers often do this by discovering new brewing yeast strains and by experimenting with innovative fermentation techniques.

However, the in-house resources needed for conducting the experiments and small-scale brewing trials required for properly assessing new yeast strains or fermentation techniques often do not exist. Instead, brewers rely on information provided by brewers in other provinces and countries that have these resources.

## Science

As craft beer gains in popularity, many Ontario craft breweries are growing their businesses and expanding their markets by selling their products in other provinces and countries. This often requires shipping the beer over great distances, sometimes in unfavourable and unrefrigerated conditions. Given beer is a perishable food item, this poses a great challenge to many craft breweries, as their beer consequently requires greater flavour stability/shelf-life to maintain quality.

A key factor in determining shelf life of beer is its microbiological integrity. Although no pathogens grow in beer due to its low pH, other microbes, if present even in the tiniest amount, can grow in beer over time, producing detectable levels of certain stale off-flavours and aromas. Many smaller breweries do not have a quality control facility to conduct the appropriate microbiological tests, which are crucial to ensure the beer's consistent microbiological stability, which maintains the intended flavour and aroma profiles during their extended time in the market.

## The solution

In order to respond to the challenges faced by local craft brewers, and thanks to a grant from NSERC to purchase the necessary equipment, Durham College is focusing on craft brewing research using a newly purchased and installed pilot brewing line and a brewing microbiology lab. The 50-litre pilot brewing line is consistent with a scaled down version of a production line and includes a mini brewing kettle, mini lauter, heat exchanger, fermenters, wort chiller, low pressure steam boiler and cold room.

For the lab component, the college built on its strong microbiological programming and infrastructure. The lab equipment consists of a freezer, refrigerator, autoclave, centrifuge, stereo phase contrast microscope, PCR system, ultraviolet spectrophotometer, digital water bath, hemocytometer, aerobic incubator and peripherals.

Equipment for both the brewing line and lab were acquired through an NSERC grant. The brewing line received its manufacturing licence in fall 2016 and the lab became functional in May 2017. It provides brewers and researchers with access to the infrastructure, instruments and expertise that are often too expensive for most small breweries. With the ability to propagate and maintain yeast strains and conduct scientific analysis, Durham College will undertake a number of projects, under the direction of a team of microbiologists and an experienced brew master, to help craft brewers address the challenges they are currently facing, ultimately leading to an even better product within this growing industry.

The brewing line and lab will be housed together at the W. Galen Weston Centre for Food by fall 2017. This facility will provide brewers and researchers with access to infrastructure, instruments and expertise too expensive for most craft brewers to own themselves in order to propagate and maintain the yeast strains and conduct scientific analyses to ensure the microbial integrity of the beer. Various projects with craft brewers are now underway or in development, under the direction of a team of microbiologists and an experienced brew master.

### **New IPM techniques and strategies for Apple Leaf Curling Midge**

**Industry partner:** Ontario Apple Growers

**Principal investigators:** Margaret Appleby and Dr. Riaz Shah, School of Science & Engineering Technology

**Research assistants:** Bolin Leung, Emily Truong

With the increase in apple acreages in Durham Region, damage to crops by a new pest, the apple leaf-curling midge (ALCM), has become significant. Durham College researchers helped develop a model based on the correlation between weather and biological processes to manage ALCM effectively. This included collection and analysis of field data by studying adult emergence from pupa under temperature regimes and also by transferring the eggs from field samples to potted trees in the lab and successfully establishing ALCM on those plants.

**Funder:** NSERC

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### **Five-step samosa automated assembly line**

**Industry partner:** Sultan of Samosas Inc.

**Principal investigator:** Rob Braithwaite, School of Science & Engineering Technology

**Research assistants:** Gregory Barnet, Derek Heyblom, Chris Hinton, Dilteq Singh

Sultan of Samosas Inc., a manufacturer of premium samosas, struggled with the lack of automation in its samosa assembly process. That lack of process was a barrier to expanding the business to the large format retail sector. However, they worked with Durham College to develop a semi-automated assembly line, which mechanized the five-step samosa assembly process, allowing the company to increase production, gain new business and franchise its operations globally.

**Funder:** NSERC

### **A software for greenhouses**

**Industry partner:** Floragenie

**Principal investigator:** Amit Maraj, School of Business, IT & Management

**Research assistants:** Mike Davis, Johnathan Martell

A number of factors can influence the production timing of specialized flowers and plants grown in greenhouses. Accurate scheduling and detailed recordkeeping can help ensure plants grow to marketable size at the right time of year. Software that can be customized for a specific crop can assist with that scheduling, tracking and management but is often unattainable for small and medium-sized growers. To address this challenge, Durham College worked with its industry partner Floragenie, to create a web-based software program that can simplify and expedite planning and productions for mid-tier greenhouses, making their operations efficient and cost-effective.

**Funder:** National Research Council – Industrial Research Assistance Program (NRC-IRAP)

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### **Control systems in brewing**

**Principal investigator:** Phil Jarvis, School of Science & Engineering Technology

Producing a good-tasting beer requires a controlled and repeatable brewing process. In order to help craft brewers create recipes that are consistent and can be produced multiple times, Durham College developed a proof of concept that will see real-time data collected and a programmable logic control system installed on the pilot brew line to monitor and manage any process that the brew master deems necessary.

**Funder:** DC Internal Research Fund





## Development of a buyer and supplier platform (food portal)

**Industry partner:** Better Buying Hubs Ventures Ltd. (BBH Ventures)

**Principal investigator:** Amit Maraj, School of Business, IT & Management

**Research assistant:** Mahatab Tamal, Eric Mackie

After learning 40 per cent of all food produced in Canada goes to waste, BBH Ventures created Shelflifefoods.com, an online bid-based platform, to address the issue. By hosting a network of food producers and suppliers on a single platform and connecting them with buyers in real time, the sale and delivery of these surplus, perishable food products was optimized. Since its inception, Shelflifefoods.com has established a niche market to capture the significant capital losses created by food waste.

**Funder:** NSERC

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## Backend task automation

**Industry partner:** Deveron UAS

**Principal investigator:** Amit Maraj, School of Business, IT & Management

**Research assistants:** Francis Hackenberger, Jacques Levasseur

Deveron UAS uses drones to collect aerial imagery and data that helps farmers increase farming efficiencies and reduces the farming costs of their daily operations. By working with Durham College to integrate a cloud storage solution, along with a pre-existing web-based application that interfaced with all their image data, Deveron UAS was able to increase their operational efficiency and service delivery professionalism.

**Funder:** NRC-IRAP

## Time-lapse video

**Industry partner:** BASF Canada Inc.

**Principal investigator:** Allan Fournier, School of Media Art & Design

**Research assistants:** Victoria Evans, Sabrina Caruso

As an industry leader with a broad portfolio of fungicides, insecticides, herbicides and seed treatments, BASF helps farmers sustainably increase the yields and quality of their crops. Durham College worked with the company to create time-lapse videos showing the effectiveness of one of its products on apple trees, thus adding to its growing portfolio of videos showing the effectiveness of its products. Severe drought conditions were created in the college's growth chamber and young apple trees were treated with BASF's product. A time-lapse set of pictures were taken over an 11-day period to demonstrate how the young apple trees were able to withstand the drought due to the effects of the BASF product.

**Funder:** Industry partner

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## Cold-frame research — the final stages

**Principal investigators:** Greg Moran, School of Skilled Trades, Apprenticeship & Renewable Technology and Shane Jones, School of Science & Engineering Technology

**Research assistants:** Andrew Noel, Samander Mirzad

Previous research conducted by Durham College, on cold-frame technology demonstrated how solar energy could be converted to thermal energy to support plant growth and extend the growing season. In this phase of the project, a robust, water-resistant sensor was installed that could transmit information about the conditions in the frames using cloud-based technology. This data allowed researchers to immediately adjust the growing environment in response to the information they received. This fast flow of information and remedial action saved time and increased the efficiency of the cold frame.

**Funder:** DC Internal Research Fund







## ENABLING TECHNOLOGIES OF THE FUTURE

### Development of iPass-X iOS app

**Industry partner:** Precise ParkLink Ltd.

**Principal investigator:** Clint MacDonald, School of Business, IT & Management

**Research assistants:** Eric Mackie, Jennifer Walker

Precise ParkLink has bridged the gap between parking management and parking technology. Having streamlined the parking payment process through their web-based portal, iPASS, they needed an iOS application to improve their customer experience. Working with Durham College, the iPass-X application was developed in combination with a Web API to allow clients to register, update and maintain their personal and parking profiles in addition to viewing past transactions and requesting new cards and new parking services.

**Funder:** NSERC

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### Use of UAV for precision agriculture and cloud-based server

**Industry partner:** Woodleigh Farms

**Principal investigator:** Amit Maraj, Professor, School of Business, IT & Management

**Research assistants:** Michael Longauer, Shaun Lloyd, Matthew Pottier

Woodleigh Farms has been using the normalized difference vegetation index (NDVI) and near-infrared sensors found in unmanned aerial vehicles (UAV) to inspect in-progress crops. However, their software was unable to incorporate and process the NDVI images into the farm software programs. By working with the team at Durham College, bridging software was created to process the data from the UAV and incorporate the high-resolution NDVI images into a variety of databases. This allows Woodleigh Farms to scout fields using different methods and with a high level of accuracy, which in turn allows them to serve more farmers. In a second, related project Woodleigh Farms required Durham College to research and set up a working cloud-based server to host the complete software solution to serve their customers, which was required to integrate and deploy their new program within their existing solution.

**Funders:** NSERC and Ontario Centres of Excellence (OCE)

### Strategic smart mobile app and cloud-based server

**Industry partner:** StrategicSmart Inc.

**Principal investigator:** Amit Maraj, Professor, School of Business, IT & Management

**Research assistant:** Mahatab Tamal, Eric Mackie

StrategicSmart Inc. built a credit card-sized tracking device, called WeTraq, which gives caregivers and families information about their loved ones and helps prevent wandering emergencies. Because mobile applications are modularized to serve a certain purpose, applications are required to perform identically across all ecosystems. Durham College developed a cloud-based server, which hosted the WeTraq mobile application. It was also able to strengthen and expand StrategicSmart's current RESTful application programming interface server offerings to include code for additional functionalities such as GPS tracking, authentication and database querying. The server helped the WeTraq application to function more efficiently in a mobile environment.

**Funders:** NSERC and OCE

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### Performance evaluation of a technology

**Industry partner:** Dynacurrent Technologies Inc. (DTI)

**Principal investigators:** Dr. Ali Taileb, School of Science & Engineering Technology and Atul Tyagi, School of Business, IT & Management

DTI has developed and patented new and innovative technologies to heat liquid using electricity. Current testing shows these new technologies to be more effective than other electrical heating technologies currently available. In order to gain market acceptance of these new technologies, DTI needed to conduct third-party testing and did so by installing the technologies in an existing furnace in one of the test houses at Durham College's Whitby Campus. Performance data was collected over the heating season, which the college then analysed. The findings were then presented in a written report for DTI.

**Funder:** NRC-IRAP



# WeTraq – A Comp

WeTraq is a credit card sized device that allows you  
valuable possessions anywhere



PRODUCT TO ENSURE BETTER

TRACKING DEVICE

## Design of a scalable five-axis machine

**Industry partner:** Cancam Ltd.

**Principal investigator:** Rob Braithwaite, School of Science & Engineering Technology

Cancam Ltd. developed a scalable five-axis, flexible manufacturing platform that has the potential to enable automation in many industries by allowing companies to grow their equipment platform size as required and even enable “pop-up” factories to address short-term and movable demand. Durham College developed the first designs, simulation and modification of a new lightweight and flexible skeleton to support the machine and its quick set up and tear down.

**Funder:** NRC-IRAP

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## Designing a control system for energy efficiency

**Industry partner:** Enviroaire

**Principal investigator:** Gary Heagle, School of Science & Engineering Technology

**Research assistant:** Carson Rouse, Sean Jones

Enviroaire recently launched an energy-efficient enviro ZX refrigeration unit, which needed an automated control system to enable the unit to run more efficiently. The project required the design of an electronic module to both monitor and control these units locally as well as remotely. Durham College worked with Enviroaire to create a control system on the unit that was able to reduce the operation and maintenance costs, improve the system reliability, increase the productivity and reduce resource consumption and greenhouse gas emissions.

**Funder:** NSERC

## Housing for small watches

**Industry partner:** Henlen Watches

**Principal investigator:** Rob Braithwaite, School of Science & Engineering Technology

**Research assistant:** Gregory Barnet

Henlen Watches worked with Durham College to develop interchangeable watch covers. The result was the creation of 3D metal watch covers, suitable for market display, and prototype working models. Hand-finishing and circuit-testing procedures were used to confirm functionality.

**Funder:** NRC-IRAP

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## Mobile application mirrored web platform

**Industry partner:** Think Dirty Inc.

**Principal investigator:** Amit Maraj, School of Business, IT & Management

**Research assistants:** James Pierson, Scott Rocha, Grayson Thornbury, Jeremie Ngandu

There is growing public concern about the safety of cosmetic products. The Think Dirty mobile app is addressing the issue by providing toxicity, carcinogenicity and allergenicity information to consumers. Durham College developed a mobile application for Think Dirty Inc. that mirrored the web platform, so consumers can access the information about various cosmetics remotely, thus making informed choices and better managing their health.

**Funder:** NSERC



## **Pitstop – dashboard management system**

**Industry partner:** Ansik Inc.

**Principal investigator:** Amit Maraj, School of Business, IT & Management

**Research assistants:** Scott Rocha, Austin Garrod

Ansik Inc., a company that designs and develops safety solutions for the automotive industry, developed a service platform called Pitstop. Powered by aggregating data from multiple sources, the platform performs machine learning and data analytics, which give dealers real-time diagnostics and indicates predictive maintenance for vehicles. Durham College developed a functional dashboard so those dealers can view their dealership metrics and other statistics, giving them more control over interactions with their customers and other stakeholders. This helped Ansik provide vehicle maintenance services to its clients in a more efficient manner.

**Funder:** NSERC

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## **iPass-X Android app development**

**Industry partner:** Precise ParkLink Ltd.

**Principal investigator:** Clint MacDonald, School of Business, IT & Management

**Research assistants:** Andrew Julian Janosi, Kaleb Bernou, Matthew Cormier, Prentice Lauzon

Precise Parklink (PPL), which strives to provide users with cutting-edge parking technology, worked in collaboration with the Durham College research team to develop a new multi-platform enterprise software system. This allowed PPL to upgrade their existing system and added many new capabilities to both the technical infrastructure and end-user experience. An Android mobile application was also developed and integrated into their new iPass-X system.

**Funder:** NSERC

## **Designing and developing a battery-management system**

**Industry partner:** EV Fern Ltd

**Principal investigator:** Philip Bayer, School of Science & Engineering Technology

**Research assistants:** Andrew Prandovszky, Stephen Prasad, Nathan Mueller

Energy storage systems and other clean emergency power supplies made by EV Fern Ltd use lithium-ion battery chemistry that is only compatible with certain battery management systems. The company was dependent on external suppliers to provide those systems, which affected the delivery and cost of their solutions because of the import duty and transportation costs. As a solution, the Durham College team developed a battery management system specifically for the company, giving them in-house capabilities and control over their products.

**Funder:** NSERC

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## **ACP – development and management dashboard**

**Industry partner:** Atlantic Coated Paper Ltd.

**Principal investigator:** Clint MacDonald, School of Business, IT & Management

**Research assistants:** Christopher Alexander, Rachel Enright, Matthew Wierzbicki

ACP specializes in extrusion-coated and laminated products. Each department in the company was using different processes and tools to manage day-to-day sales and marketing activities, creating a lack of overall coordination and integration. Durham College developed a management dashboard to help coordinate the company's sales and marketing activities, while also managing their existing complex, multi-vendor and multi-platform IT ecosystem. This provided senior management with the ability to make evidence-based, strategic-growth decisions for the company.

**Funder:** NSERC



## **Ontario Centres of Excellence, Voucher for E-Business Program**

Multiple industry partners and principal investigators and researchers

During this year, Durham College served 10 companies and completed projects including promotional videos, websites, cloud-based and API servers and mobile applications as part of the Ontario Centres of Excellence (OCE) Voucher for E-Business (VEB) Program. Designed to connect eligible industry partners with college expertise to help them scale up their business development, adoption and implementation of online tools to drive innovation, the VEB's goal is to lead to new market opportunities for the business.

Funder: OCE VEB Program

## **ENHANCING SCHOLARLY TEACHING AND LEARNING**

### **Using serious games to assess decision-making on the fire ground in pre-fire service students**

Principal investigator: Dr. Michael Williams-Bell, School of Health & Community Services

Firefighting is an extremely physiologically and psychologically demanding occupation that has limited resources for training personnel. The use of serious games can offer a safe and cost-effective alternative to real-life practice. This research used serious games to assess decision-making under heat stress. The outcomes of this study, which will become known once the participants are tested later next year, may provide fire services with the ability to train decision-making on the fire ground to become more robust under stress using serious game technology.

Funder: DC Internal Research Fund

## **An Evaluation of interdisciplinary field placement learning on health care student's understanding of other professional roles, inter-professional collaboration skills and perceived preparedness for real world practice**

Principal investigators: Lorraine Closs and Teresa Avvampato, School of Health & Community Services

Research assistants: Kristina Bolen, Schae Dunston

The health care system demands a more multidisciplinary and collaborative approach to client care. Research was conducted to formally investigate the outcomes of interdisciplinary community placements on student learning and determine the benefits of inter-professional collaboration

Funder: DC Internal Research Fund

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### **Emotional intelligence and resilience in first-year college students: what is the relationship?**

Principal investigator: Joanne Paterson, School of Justice & Emergency Services

Research assistants: Spencer Haze, Alisha Fisher, Courtney Minos and Maddison Shaddock

While there is an evidence-based, positive correlation between higher emotional intelligence (EI) and academic achievement, this research considered the relationship between specific EI competencies and resilience. Results demonstrated a relationship between composite emotional intelligence and academic and social engagement resilience.

Funder: DC Internal Research Fund



## **CICE graduate student perceptions and definitions of success**

**Principal investigator:** Shauna Moore, School of Health & Community Services

**Research assistant:** Hala Elatawani

This qualitative study was conducted to gain an understanding of how Community Integration Cooperative Education (CICE) graduates perceive their learning experiences and how this unique group defines success. Based on the data collected, definitions of success were varied; however, more time to develop and master communication skills was identified as a primary area of focus for integration into future curriculum.

**Funder:** DC Internal Research Fund



## **Using the Immediate Feedback Assessment Technique for non-assessments: student perceptions and performance**

**Principal investigators:** Dr. Lynne Kennette and Dawn McGuckin, School of Interdisciplinary Studies

The Immediate Feedback Assessment Technique (IFAT) is a testing system that transforms traditional multiple-choice testing into an interactive learning opportunity for students and a more informative assessment opportunity for faculty. In this study, IFAT was used during a collaborative class activity to provide students with immediate feedback on their performance. To test the technique, one section of a course used IFAT, while students in another section of the same course served as a control group, re-reading their notes instead of using the IFAT activity. The study showed benefits for student learning (e.g., grade improvements) when using the IFAT compared to the control group, and students reported a positive experience.

**Funder:** DC Internal Research Fund



## PERFORMANCE METRICS

### APPLIED RESEARCH — BY THE NUMBERS

#### RESEARCH PROJECTS

**23**

2015-2016

**39**

2016-2017

#### RESEARCH FACULTY

**23**

2015-2016

**21**

2016-2017

#### STUDENTS

**53**

2015-2016

**84**

2016-2017

### 2016-2017 TOTAL EXTERNAL RESEARCH FUNDING RECEIVED

**\$679,683**

### TOP 50 RESEARCH COLLEGES IN CANADA

Durham College was once again named one of Canada's top 50 research colleges by Research Infosource Inc., a Canadian research and development intelligence company.

This is the fourth consecutive year the college has been included on the list, which is informed by data on research income, research intensity and research partnerships and projects at colleges across the country.





# INSTITUTIONAL RESEARCH AND PLANNING

The Institutional Research Planning (IRP) team collaborates with a number of stakeholders to provide data that supports planning, reporting or other strategic partnership initiatives within the college. Two of the major projects completed this year include the Durham College Environmental Scan (e-scan) and Program Health Matrix (PHM) reports for each of the post-secondary programs.

The e-scan provided critical longitudinal and competitive information on relevant internal considerations including application and demographic trends as well as student outcomes. It also looked at the external economic and regulatory environment to support enrolment planning.

The PHM reports provided summative measures to support post-secondary program effectiveness through quality and sustainability assessments.

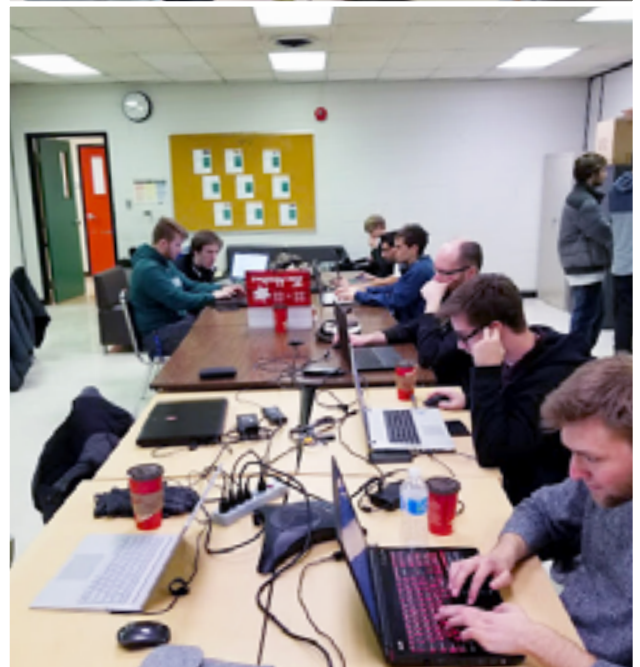
In addition, the team initiated significant use of interactive data visualization for information sharing to ensure an effective and user-friendly data experience. The team accomplished their goals and objectives, often under very tight timelines.

Throughout 2016-2017, the IRP team undertook many new requests in addition to the regular work of providing administration and faculty with consistent and accurate data to facilitate planning and decision-making.

## PERFORMANCE METRICS

At a glance:

- **1,555** Student Feedback Questionnaire reports:
  - » **987** faculty members
  - » **31,799** student respondents
- Key Performance Indicator report cards:
  - » **133** Programs
  - » **20** Service Areas
  - » **14** for Durham College Leadership Team
- **140** Program Health Matrix (PMH) reports
- **9** PHM school snapshots
- **13** environmental scans to support decisions on new program development
- **10** program information packages and presentations for program review and renewal
- **15** Student Affairs reports
- **29** ad hoc projects



## ADDITIONAL PROJECTS:

Other projects of particular note include:

PRESENTATION/REPORT	STAKEHOLDER
DC-UOIT Pathways, KPI Report, Employee Engagement	Board of Governors
Durham College Environmental Scan	Enrolment Advisory Committee
Challenging Courses Dashboard	Student Persistence and Retention Working Group
Dual-credit student enrolment and post-secondary conversion	School-College-Work Initiative team
Assessing impact of Student Academic Learning Services (SALS) PASS project on success of students enrolled in Accounting ACCT 1200 course	SALS
Supporting Student Success at Durham College	Coordinating Committee of Vice-Presidents, Students Conference, Colleges Ontario
KPI improvement recommendations	KPI Taskforce
Metric identification and analysis support - Strategic Mandate Agreement (2017-2020)	Office of the President
First Generation, Aboriginal student data analysis	Student Affairs

Additionally, the IRP team collaborated with Durham Workforce Authority and the Region of Durham to execute *The Skills for Tomorrow* employer survey project as part of the Local Employment Planning Council initiative funded by the provincial government.

The survey used an innovative approach based on the North American Industry Classification System – National Occupational Classification framework to collect sector-specific occupational labour market information for the lakeshore municipal areas in the Region of Durham.

The findings for the regional employers' skills requirements and supply perceptions were presented through a data visualization tool.

## SURVEYS: DEVELOPMENT, ANALYSIS AND REPORTING

IRP supported the following projects for strategic planning and decision-making through survey development, administration, and reporting:

1. **Board effectiveness:** evaluated and reported on the Durham College Board of Governors self-assessment and provided information to support a board action plan.
2. **Degree development:** developed stakeholder surveys and reported results to support the proposed Honours Bachelor of Behavioural Science program with relevant employers and current students and graduates from a number of related Durham College programs.
3. **Employee engagement:** evaluated and reported feedback on employees' experiences and satisfaction with various aspects of their employment to provide information to support department-level action plans.





# SCHOLARSHIP REPORT

For nearly a decade, applied research and innovation has been incorporated into the college's strategic, academic and operational plans as part of the overall approach to meeting the needs of industry and community partners. Research informs and supports teaching, provides experiential learning opportunities for students, contributes to new knowledge across disciplines and positively impacts the economy.

Scholarly activity is the process whereby research is disseminated, whether it is the discovery and interpretation of knowledge, the development of new technologies, methods, materials or applications or the integration of knowledge leading to new understanding.

There were two calls inviting all faculty and staff members to submit information about their publications and knowledge mobilization/translation activities, as well as other research outcomes between April 2016 and March 2017. The net was cast widely thanks to the research coordinators and participation was voluntary.

The following is a broad summary of the research and scholarship achievements at Durham College:

Jelavic, M., & Salter, D. (2017) Managing transnational virtual teams: Cultural and technological considerations. *Canadian Manager*, 42(1), 12 – 15.

Salter, D., & Jelavic, M. (2017) Corporate culture and customer value: Theoretical perspectives of the market orientation concept. *Canadian Manager*, 41(4), 14 – 17.

Kennette, L. N. & Hanzuk, W. (2017). The Benefits of Co-mingling with Faculty Outside your School: A reflection Catalyst, <http://cafe.durhamcollege.ca/index.php/resources/catalyst>

Redd, B. R., & Kennette, L. N. (2017). Getting students to read instructor feedback (and maybe actually learn from it). *College Quarterly*, 20(2), <http://collegequarterly.ca/2017-vol20-num02-spring/getting-students-to-read-instructor-feedback-and-maybe-actually-learn-from-it.html>.

Kennette, L. N. & Hanzuk, W. (2017). Group work and collaborative activities for all. *Faculty Focus*. <https://www.facultyfocus.com/articles/instructional-design/group-work-collaborative-activities/>

Kennette, L. N., Van Havermaet, L. R. & Redd, B. R. (2017). Use it or lose it: Why and how to provide opportunities for your students to practice course content. NOBA Project [Invited blog] <http://noba.to/vxjt6das>

Kennette, L. N. (2017). Using media in the classroom: A cautionary tale and some encouraging findings. *Society for the Teaching of Psychology Blog*, <http://teachpsych.org/Excellence-in-teaching-blog/4710479>.

Kennette, L. N. & Hanzuk, W. (2017). Thirty is the new fifteen. *Transformative Dialogues*, 9(3), [http://www.kpu.ca/sites/default/files/Transformative%20Dialogues/TD.9.3.3\\_Hanzuk%26Kennette\\_Thirty\\_is\\_the\\_New\\_Fifteen.pdf](http://www.kpu.ca/sites/default/files/Transformative%20Dialogues/TD.9.3.3_Hanzuk%26Kennette_Thirty_is_the_New_Fifteen.pdf).

Myatt, B. & Kennette, L. N. (2017). Towards a positive "U". *Faculty Focus*. <http://www.facultyfocus.com/articles/effective-classroom-management/towards-positive-u/>

Kennette, L. N. (2016). Using a new tool in a new way: How the IF-AT can help students remember content and acquire essential employability skills. *NISOD Innovation Abstracts*, 38(29). <https://www.nisod.org/publications/innovation-abstracts/>

Kennette, L. N. & Wurm, L. H. (2016) On the disambiguation of meaning and the effects of cognitive load. *Current Psychology*. 35(3), 295-308.

Williams-Bell, F.M., Buren, S.M., Passmore, S.R., & Murphy, B.A. (2016) Influence of low level exercise on the within and between session reliability of the CANTAB cognitive assessment battery. Book of Proceedings, ISEK 2016, XXI Congress of the International Society of Electrophysiology and Kinesiology, 5-8 July 2016, Chicago, Illinois. ISEK.

Williams-Bell, F.M., Buren, S.M., Passmore, S.R., Murphy, B.A. (2016) Influence of low level exercise on the within and between session reliability of the Cambridge Neuropsychological Test Automated Battery. Book of proceedings, Canadian Association of Neuroscience, May 29th, 2016, Toronto, Ontario.

Williams-Bell, F.M., Passmore, S.R., McLellan, T.M., & Murphy, B.A. (2016) The effects of exercise-induced heat stress on cognitive function assessed using serious game technology, *Medicine & Science in Sports & Exercise*. 48(5S):630.

Salter, D., & Jelavic, M. (2016) Consumer variances existing between demographics and privacy concerns: The impact on online purchase behaviour. *Toronto Manager*, Summer Issue, 7 – 8.

Chiriac, Vlad & Chiriac, Martha (2016). Medical discourse in an ambulance. In Iftimie, Nicoleta-Mariana & Rusu, Olivia-Cristina (Eds.), *Discourse and Communicative Interaction* (pp. 296-306). Iasi, Romania: Politehnum

## CONFERENCE PRESENTATIONS

Closs, L., Avvampato, T. (2016) Addressing barriers through interdisciplinary field placement. Developing opportunities, collaboration and preparedness for practice. [Poster] Presented at Ontario Society of Occupational Therapists Conference, September 23-24, 2016, Mississauga, ON.

Kennette, L. N. & McGuckin, D. (2017) The Jumpstart Model: Brain-based learning and its application to lesson planning and delivery [Poster] *Learning & the Brain: The Science of Student Learning*, San Francisco, CA.

Beechler, M. P. & Kennette, L. N. (2017) The effect of gamification in general and developmental psychology courses [Poster] *Annual National Institute on the Teaching of Psychology*, St. Pete Beach, FL.

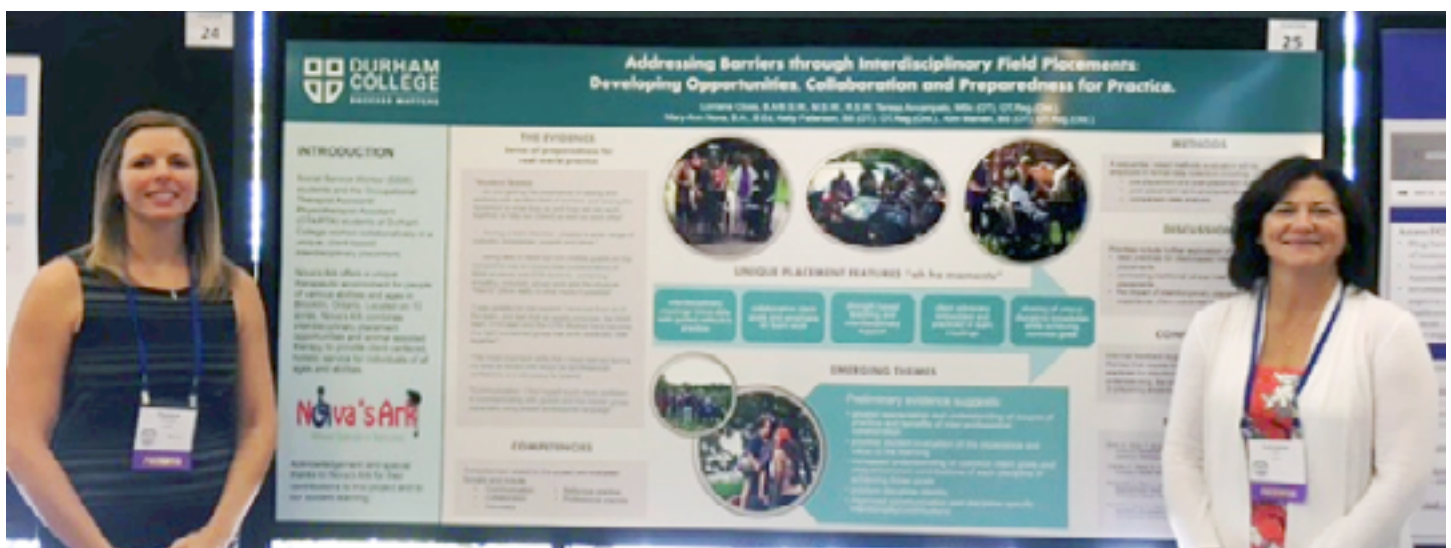
Kennette, L. N., Van Havermaet, L. R. & Redd, B. R. (2017) Planning opportunities for students to practice course content. [Participant Idea Exchange (PIE)] *Annual convention of the National Institute for the Teaching of Psychology*, St Pete Beach, FL, January 2017.

Kennette, L. N., Poinsett, M. & Beechler, M. P. (2017) Choose your own adventure: Some ideas for engaging test reviews. [Roundtable Discussion] *Annual convention of the Midwestern Psychological Association*, Chicago, IL, April 2017.

Kennette, L. N., Lin, P. S., Van Havermaet, L. R., & Redd, B. R. (2017) Universal Design for Learning (UDL): Tools and Techniques. [Roundtable Discussion] *Annual convention of the Midwestern Psychological Association*, Chicago, IL, April 2017.

Myatt, B. (2016). Applying the Principles of Positive Psychology to the Post-Secondary Classroom. Presented at the Canadian Positive Psychology Association conference, Niagara Falls, ON.

Myatt, B. (2016). Applying the Principles of Positive Psychology to the Post-Secondary Classroom. Presented at the International Positive Education Network conference, Dallas, TX.



# LOOKING FORWARD 2017-2018

As we reflect on our successes of the last year, ORSIE has a bright future ahead, with many exciting projects lined up and an outstanding team to get us there.

As the AI Hub ramps up to engage with a number of industry partners with the support of external funding, Durham College is investing in our researchers and the necessary infrastructure to build capacity. This internal investment will further develop researchers' skills and provide new learning opportunities for students to embrace emerging technologies and platforms. This is an area of applied research that will transform our lives over the years to come.

FastStart will move into the new Centre for Collaborative Education when it opens in fall 2018, bringing together entrepreneurial students, industry and community partners to share and learn and innovate. New creative spaces will generate an atmosphere geared towards furthering invention, engaging industry and supporting market innovations.

The Institutional Research Planning (IRP) team will continue to support the Enrolment Advisory Committee as the three-year enrolment management plan is finalized. With a new Strategic Mandate Agreement (SMA) between the Ministry of Advanced Education and Skills Development and the college, the IRP team will play a key role in collecting and reporting metrics and contributing to the development of future metrics for the next SMA.









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