Breaking Ground On Fully Work-Integrated Degree Programs:
Early Findings Revealed

BASc in Digital Technologies
Impact Summary 2024

LASSONDE SCHOOL OF ENGINEERING | YORK UNIVERSITÉ UNIVERSITY

About Lassonde School Of Engineering, York University

York University, with over 54,500 students, including approx. 30% who are first-generation in their family to attend postsecondary education, is dedicated to making high-quality education accessible.

Celebrating a decade of rapid growth with nearly 6,000 students, York's Lassonde School of Engineering is breaking down systemic barriers to foster meaningful change in STEM education. Specializing in Engineering, Computer Science, and related fields, Lassonde addresses critical skill shortfalls in ICT, ranking in the Top 200 for Computer Science globally (Times Higher Education, 2023), and remains committed to evolving education to meet societal and economic shifts.

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Message from the Dean

In a rapidly evolving tech landscape, Canada's corporate sector faces a digital skills gap, posing a significant challenge to productivity and growth. At the Lassonde School of Engineering, York University, we're dedicated to preparing the next generation to exceed the demands of the global digital economy.

Our new Digital Technologies BASc program, Canada's first fully work-integrated degree program, aims to address the ICT sector's demand for tech professionals, empowering students to earn while they learn.

Feedback from industry partners this past year highlights the program's success in fostering a productive synergy between academia and industry, crucial for maintaining Canada's global competitiveness.

The impressive performance of our students underscores the benefits of drawing on real-world experience to provide invaluable learning opportunities.

We invite you to join us in driving change and innovation by creating a more inclusive, skilled workforce prepared for the digital challenges ahead. This Impact Report showcases how we can collaborate to strengthen your company's ability to attract, develop, and retain diverse talent, as we've proven with leading employers in Canada for the first time.

Dr. Jane Goodyer
Dean, Lassonde
School of Engineering
York University

Dean Goodyer, instrumental in launching New Zealand's first degree apprenticeship model, approved in December 2019, has now brought Canada's first fully work-integrated degree program to life, applying her expertise to scale it up across the country.

Inspired by the UK's growth in similar programs and developed with insights from Manchester Metropolitan University, Lassonde's partner, the Digital Technologies program bridges critical gaps in the ICT sector.

According to the St. Martin's Group 2021 report on 'The Real Costs and Benefits of Apprenticeships' in the UK, apprentices provide a net benefit of £2,496 (approx. $4,192 CAD) during their training period. Employer-providers like IBM, which has more than 280 apprentices since bringing them on in 2010, achieves a high retention rate of 96%. Hence, employers with such retention rates reap net benefits when they no longer bear any associated training costs, providing a strong return on investment.

A First for Canada

In September 2023, York University's Lassonde School of Engineering introduced Canada's first fully work-integrated degree program to tackle the skills deficit and cultivate a diverse, innovative workforce. This initiative combines academic study with practical, paid work experience, aiming to make Canada a frontrunner in the global digital economy. The program's early findings reveal strong performance and student success, with positive feedback from students and industry partners.

Supported by organizations like Alstom, BMO, and Shopify, the program has surpassed initial expectations, as demonstrated by a 100% contract renewal rate. The program's first cohort, including high school graduates and career switchers, are successfully completing their first academic year. Students are engaged in full-time annual contract employment while simultaneously studying toward a degree. They spend 80% of the program applying what they've learned in the workplace, and the remaining 20% is dedicated to academics, including half-a-day of independent study once a week and six five-day block periods per year at Markham Campus.

Our faculty, who bring extensive expertise in computer science, operating systems, networks, security, and machine learning, have crafted a curriculum meeting both ICT industry and rigorous Ontario Universities Council on Quality Assurance standards. They deliver a strong academic base in computer science theory while facilitating immediate practical application in the workplace.

Through personalized coaching and support from our Professional Skills Coach, students also develop the knowledge, skills, and behaviours essential for both academic and professional success. This unique relationship between students, employers, and academic faculty fosters the growth of social skills, critical thinking, self-direction, and self-actualization competencies needed for the work environment.

By reducing financial barriers and aiming to include learners currently outside the digital economy, the program helps diversify the tech workforce. Lassonde is now expanding this model nationwide, inviting industry collaboration to meet Canada's pressing economic and security needs.

100%

of participating employers have committed to extending student contracts for the 2nd year.

**Employer
Partners**

ALSTOM

BMO

dayforce

ONTARIO POWER
GENERATION

QUANSER
INNOVATE·EDUCATE

shopify

How the Program Works

30 credits
Students earn 30 credits through consecutive Fall, Winter & Summer terms

4hrs online
Students spend four hours a week dedicated to online course work

6wks /year
Students attend six weeks a year of in-person learning usually in 1-week blocks

How the Hiring Process Works

300+ applicants
Access a talent pool of more than 300 applicants. You can post, interview, and hire from March to July for positions starting in September.

12 -month work term
In Sept., students are available for a 12-month work term

$23 /hour
A student's average salary is $23 per hour

$5-7K /term
Funding Incentive: Student Work Placement Program (SWPP) $5-7K salary per student per term

Transforming the ICT Sector

Choosing from a broad and diverse pool of qualified applicants, employers haven't just filled positions—they've brought in creators who add depth and breadth to their teams, blending fresh ideas with seasoned skills to accelerate innovation.

As shown in the graph, the Digital Technologies program boasts a higher proportion of women compared to traditional Computer Science programs. By increasing gender equity, employers can harness diverse perspectives, thereby improving team dynamics and problem-solving capabilities.

41%

16%

Digital Technologies

Computer Sciences

Representation of Women in Digital Technologies vs. Computer Science Programs

Meet Our Students:
Recent High School Grads

Could a recent high school graduate with a passion for technology help solve your business challenges?

Organizations that engaged with our high school talent this year experienced the impact of their curiosity, self-direction, digital savviness, and ambition. These young creators, immersed in digital tech from birth, brought unprecedented creativity & innovation to tech projects.

Meet Sienna

A Product Security Analyst at **Dayforce** with project experience in Python and OOP principles. She brings a unique blend of technical prowess and customer service expertise. As a competitive pre-professional ballerina, she embodies discipline and creativity, enriching tech projects with innovative solutions.

"Python/Java and Git skills allowed me to have a better understanding of security tests and comprehend the technical complexities of our products, while my knowledge of cyber-space provided a broad view of potential threats and defensive methods."

Meet Gira

A Dev Degree Intern at **Shopify**, whose journey includes attending Harvard University for the Advanced Placement Computer Science course and completing the Ruby on Rails Training Path program. As the founder of "Cracking the Code," Gira is passionate about empowering youth through free coding workshops. With over a year of customer service experience, Gira brings a diverse skill set and a commitment to innovation.

"I can focus on my studies and work inside my profession."

Professionals and Transfer Students

The leap forward in digital technologies isn't just from the young but also from the experienced.

Professionals like math teachers pivoting to cybersecurity, and tech support experts advancing in web development, have merged seasoned insight with academic knowledge to introduce novel solutions and propel projects forward.

Meet Eamon

An Information Security professional at **BMO** who has completed a year of computer science studies at a Canadian university. Eamon holds two online certifications in Python, JavaScript, and Data Structures, and brings a year of industry experience in tech support and web development, specializing in Ruby/Ruby on Rails and HTML.

"Being recognized as 'Student of the Term' reflects my enthusiasm for continuous learning and meaningful contribution in the complex field of cybersecurity. My quest for knowledge and efficient communication has allowed me to integrate seamlessly into the BMO team and contribute effectively from the outset."

Meet Caitlin

A Data Analyst at **Quanser**, who has two years of engineering science studies at a Canadian University, Google Data Analytics Professional Certificate, and Salesforce Platform Developer certification. With IBM Certification courses in full-stack software development and data analytics, Caitlin is proficient in various programming languages including C, C++, Python, and MATLAB.

Learning Experience

Bridging Theory and Practice through Strategic Scaffolding

At Lassonde, the learning experience is intentionally designed to connect academic theories and practical applications right from the outset, enabling students to contribute meaningfully to their organizations from day one. Students benefit from a competency-based grading system that assesses mastery in stages, fostering a clear understanding of what's required to achieve specific competency. This method helps delineate a structured path to academic success, further enhancing students' readiness for the workplace.

"Unlike traditional point-based systems, which prioritize memorization and immediate correctness by tallying points for completed tasks, competency-based grading focuses on deeper understanding and provides transparent criteria for academic success."

Larry Yueli Zhang
PhD, Assistant Professor, Teaching Stream, Dept. of Electrical Engineering & Computer Science, **Lassonde School of Engineering**

Curriculum Progression

Year 1
(Foundation)

Establishes a strong base with courses like 'Introduction to Computational Problem Solving' and 'Technology Leadership and Professional Reflection I.' These courses lay the groundwork for foundational tech concepts, alongside leadership and reflection, preparing students for immediate workplace contributions.

Year 2
(Skill Enhancement)

Builds on the first year with more sophisticated courses such as 'Data Management Systems' and 'Introduction to Project Management.' Students gain the ability to manage complex data systems and they oversee projects, understanding their full life cycles. Advanced topics typically reserved for the third year, such as data science and network systems, are introduced, propelling students far ahead of their peers in traditional programs.

Year 3
(Advanced Computer Science)

Students dive into high-demand technologies with courses like 'Cloud Computing' and 'User Interface Development,' applying what they learn directly to real-world projects. This year solidifies their advanced skills and readiness to handle contemporary technological challenges.

Year 4
(Infrastructure Technologies)

Concentrates on specialized areas such as 'Auditing and Governance of Information Systems,' preparing students to ensure the security and integrity of IT infrastructures. This final year ensures they are well-prepared to take on significant roles in technology leadership upon graduation.

Employer Feedback

"Our student is exceeding our expectations... He has demonstrated a lot of maturity, drive, interest and professionalism. In fact, I usually have to give him fewer instructions than the others in the group."
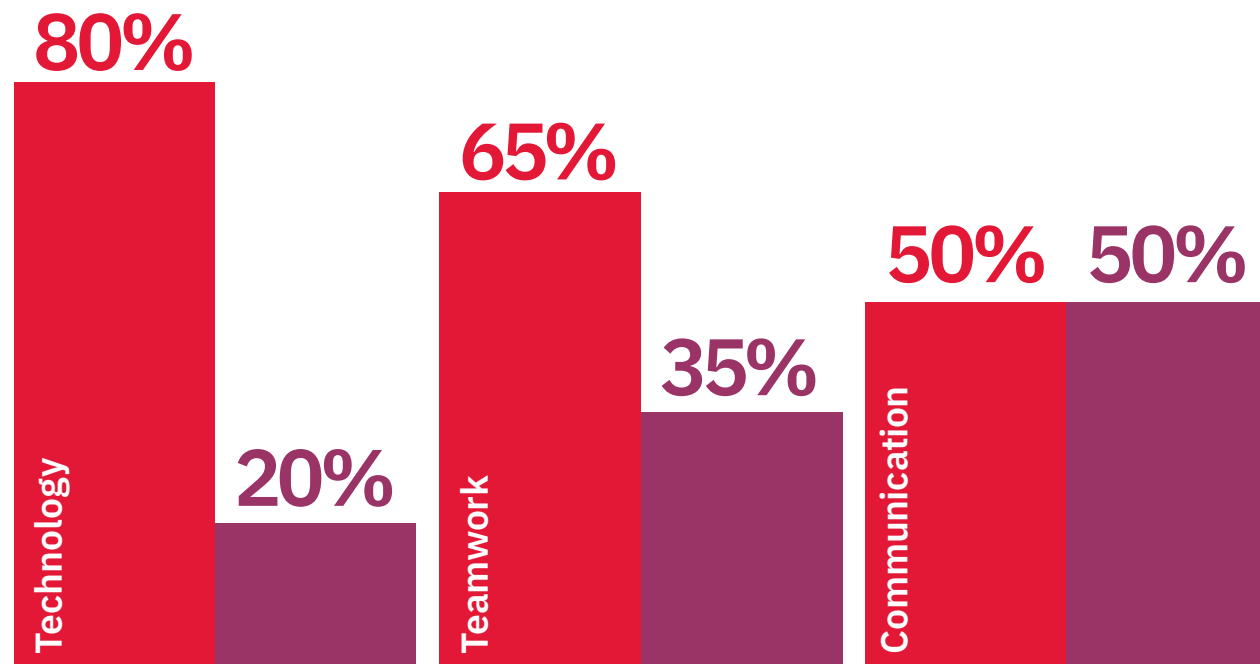
Sajal Kumar
Database Security Architect,
BMO

80%

of employers reported a positive impact from hiring Digital Technologies students within the first eight months of participation.
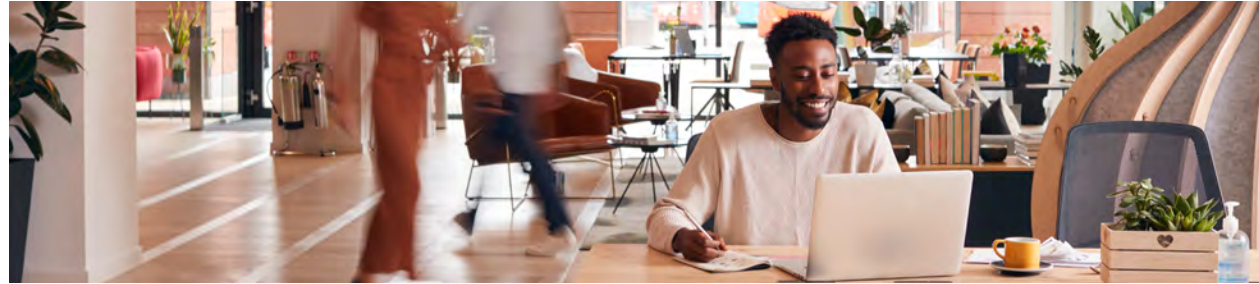
This graph shows supervisors' feedback on key competencies

- **■ Exceeds Expectations**
- **■ Excellent Progress**

80% **20%** Technology

65% **35%** Teamwork

50% **50%** Communication

Technical Contributions

Our students' work has directly influenced the development of robust, innovative solutions that solve real-world problems, enhancing our partners' competitive edge.

Introduction to Data Science

"Our student demonstrates strong organizational skills using Confluence and Excel for metrics tracking and event organization. Her involvement in various projects, such as Asset Registration, L&D Training, and the SECBUG Hackathon tracker, showcases her versatility. She also achieved a Green Belt Certification and the IANS Secure Coding Certification, highlighting her dedication to professional development."

Tatiana Khair
Application Security Manager,
Dayforce

Understanding Cyberspace & Security Fundamentals

"Our student has done outstanding work so far, building a Python script that will be used as an integral part of our threat modeling process. This solves a key issue with data formatting and allows us to visualize our threat modeling data, making it more presentable, and easier to understand. The result is that we can better under-stand the way that cyber threats impact our organization. The key differentiator is that students (in this program) can relate what they're learning in the classroom to real-life business scenarios and connect the two."

Alistair Lamb
Sr. Security Analyst,
Dayforce

Software Development

"Our student has been consistently growing in her understanding of our problem and product space while developing her ability to perform and ship impactful code with greater complexity."

Hamish Robertson
Development Manager,
Shopify

Realizing Value:
Uninterrupted Productivity

Feedback from our partners has highlighted the benefits of this fully work-integrated degree model, which provides ongoing student engagement over multiple terms. This continuity is a contrast to the cyclical nature of traditional short-term student placements, delivering deeper and more consistent impact on projects and initiatives right from the start.

"There is a good pool of students that we can hire from, and this got me really excited, because we already had a shortage of talent within cybersecurity, especially after learning that with this program we have the flexibility of having the student for a longer duration — at least one year and if it works out well, between the student and the organization, it can be extended up to four years."

Vidu Mishra
Section Head
Information Systems,
Ontario Power Generation

100%

of employers agree that the benefits of this fully work-integrated degree model support their talent pipeline.

What motivates employers to participate in the integrated degree program

✔ **Supporting their talent pipeline**

✔ **Bringing new talent into their organization**

✔ **Encouraging employee career progression**

✔ **Delivering projects of importance to the organization**

✔ **Upskilling their workforce**

✔ **Improving productivity**

✔ **Increasing employee engagement and motivation**

✔ **Addressing changing organization needs**

✔ **Increasing innovation**

✔ **Increasing diversity**

Fully Work-Integrated Degree

The unique value of integrating full-time work with online and in-person learning

Work duration and Commitment

✔ **Longer duration: 12-16 months**

✔ **Retain in-house for up to 4 years**

✔ **Stronger commitment and loyalty**

Retention After Graduation

✔ **90% graduates are converted to full-time positions** (Shopify)

✔ **Retention average of 7 years!**
(4 years of study + 2-3 years on new grad roles, based on Shopify & UK Model)

Customized Recruitment Process: Partnering for Success

Step 1
Post and Promote

Send us your job posting, and it will go live within 24 hours. We actively promote your opportunity to 300+ high-quality candidates, ensuring you receive applications by your specified deadline.

Step 2
Interview

Take the lead in the pre-screening and interview process to assess candidates according to your requirements.

Step 3
Offer

Whether you choose to manage the job offer process directly or prefer our facilitation, we tailor our service to help you find the ideal candidate.

"Having an active student who regularly engages with other students and professors gives our team an edge on new tools and practices that are being used."

Abbey Desjarlais
Manager, Business Intelligence & Efficiencies,
Quanser

"It has been a definite win for the organization in productivity and work capacity."

Brad Nordin
Vice President Intelligence,
Dayforce

"Our student has set the benchmark for excellence this term, notably in his crucial role within a project. His critical thinking has been exemplary, and he has a remarkable ability to synthesize information from various sources, fully comprehend and resolve complex issues, and proactively anticipate needs to prioritize effectively."

Rafael Iglesias Novak
Integrated Control Center Systems Designer,
Alstom

Join us in shaping the future of digital technologies!

For more information and to explore partnership opportunities, reach out to:

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