



# BUILDING TALENT FOR CANADA'S FRONTLINE

POLYTECHNICSCANADA

Image provided by Fanshawe

# Preparing the Frontline Workforce

**The critical role of Canada's frontline workforce has never been more apparent than during the COVID-19 pandemic.** In industries like healthcare and emergency response, technology, agriculture and construction, Canadians rely on the essential workers who keep the country fed, functioning, safe and healthy. Where did they learn the skills required when we needed them most? Canada's polytechnics.

Preparing Canada's frontline workforce is no easy task. Training the essential talent pipeline must reflect the real world and its unique challenges, developing a combination of skills, techniques and knowledge that prepare Canadian students to respond to dynamic workplace realities. An applied, hands-on approach to learning that is aligned with sector-specific needs includes workplace experience, simulation, virtual and augmented reality, and practice. Lots of practice. When lives are on the line, experience and instinct need to kick in.

This industry-aligned style of teaching and learning is core to the polytechnic model of education. Polytechnics offer a broad spectrum of credentials, programs and professional development opportunities that contribute talent to our frontlines—nurses, electricians, cybersecurity analysts and environmental technicians among them.

In the following pages, we share just a few inspiring examples from Canada's polytechnics, sharing stories about the ways they are preparing student talent to support Canada's **health**, **safety**, **food systems** and **critical infrastructure.**

# Keeping Canada Healthy

While Canadians rely on healthcare professionals throughout their lives, the pandemic put a spotlight on those in caregiving occupations. Frontline healthcare workers have been actively administering and processing tests, caring for those infected and collecting data to track progress and inform decision-making. Nurses, medical assistants and administrators, emergency medical technicians and other first responders were among those who stepped up when we needed them most. Many received their training at a polytechnic.

Polytechnic education is built around workplace realities, providing realistic simulations and scenarios that develop the wide-ranging skills trained professionals require. In the healthcare field, training must consider the routine, the extraordinary and everything in between. Because trained healthcare professionals are involved at every stage—during curriculum development, as instructors, overseeing work placements and by identifying emerging equipment needs—learners benefit from in-the-trenches experience as they develop the competencies they will need in the field. Applied programming complemented by workplace experience ensures polytechnic graduates are ready for anything.

Image provided by Saskatchewan Polytechnic

RRC POLYTECH

## Health Information Managers

The pandemic created urgent need for individuals equipped with data collection and analysis skills to assist with contact tracing, ensuring those exposed to the virus were notified quickly. Fourteen students from RRC Polytech's Health Information Management Diploma program joined Manitoba's Epidemiology and Surveillance Unit when the pandemic hit. The program's emphasis on statistical analysis and health information science, combined with a unique blend of medical, computer and business courses, ensured learners could quickly transition from the classroom to the workforce. These skills have been critical in the effort to provide up-to-date information to people across the province.

SASKATCHEWAN POLYTECHNIC

## Paramedics

Saskatchewan Polytechnic's paramedic training through their Primary Care Paramedic Certificate, Advanced Care Paramedic Diploma and Community Paramedic Advanced Certificate programs provide hands-on training for the first responders of Saskatchewan's healthcare system. Learners benefit from lab and simulation training, clinical practicums and inter-professional education to develop both the technical and human skills required to perform life-saving interventions. In response to industry's need for future leaders, these programs prepare graduates for work in traditional emergency medical services, collaborative centres and industrial and community settings. Showcasing those leadership skills in action, alumni Nicholas Hennink was named the Paramedic Association of Canada's 2020 Paramedic of the Year. In addition to serving his community as a paramedic, Nicholas developed Project Warrior, an awareness and fundraising campaign to address the mental health struggles faced by paramedics.

## Registered Nurses

COVID-19 put additional pressure on healthcare providers who were suddenly faced with more patients requiring critical care. Within weeks, BCIT developed the Focused Education Preparation Advancing Frontline Registered Nurses (FEPA)—a self-directed, online course designed to 'level up' knowledge associated with telemetry monitoring, high acuity care and mechanical ventilation. Five modules, accessible around the clock and repeatable as often as necessary, include self-assessments, interactive activities, printable resources and quick guides. To date, more than 10,000 healthcare workers have accessed the course.

## Respiratory Therapists

Fanshawe's Respiratory Therapy Advanced Diploma program uses modern clinical labs and hands-on experiences to prepare learners for the realities of work as specialized healthcare practitioners. Graduates of the program are equipped to assist in critical care for patients facing cardiopulmonary deficiencies. When COVID-19—a disease primarily affecting the lungs—struck, Fanshawe students left their studies early to fill the demand for respiratory therapists in hospitals across Ontario. With only 3,000 respiratory therapists in the province and a critical need, these students made an immediate impact. Because Fanshawe's students were already familiar with the equipment, safety practices and necessities of patient care in a real-world environment, they were able to step in and hit the ground running.

Image provided by BCIT


Image provided by Fanshawe

# Keeping Canada Safe

Canada has a worldwide reputation as a safe place to live, work and play. Make no mistake though, threats abound. Climate change and extreme weather events cause harm to people and property. Cyberattacks are increasingly commonplace at schools, banks and businesses that hold sensitive personal, financial and security information. Canada is not immune to systemic racism and its impact on the safety of our communities. Keeping Canada and Canadians safe requires an intimate understanding of the threats we face today and how best to respond to them. At the same time, people in safety occupations have to be ready to deal with emerging hazards.

Training underway across Canada's polytechnics prepares the next generation of protectors and professionals in safety-focused occupations. In a world that presents threats from natural sources and malicious actors, a talent pipeline well prepared to defend against both is essential to our way of life.

Image provided by Fanshawe

HUMBER

## Social Service Workers

Those charged with supporting people in need are working in an increasingly challenging environment. Problem-solving, interpersonal and assessment skills are essential to keeping individuals and communities safe. In Humber's Social Service Worker Diploma program, students develop the skills needed to intervene in crisis situations and to work with a broad range of people including those experiencing poverty, domestic violence, mental health issues, substance abuse, post-traumatic stress and other challenging life events. Faculty with real-life work experience in the human services field teach with a focus on promoting equity and addressing barriers people face on the basis of race, class, ability, gender or sexual orientation. Strong partnerships with social and community agencies support placements that often lead to job offers before learners graduate.

FANSHAWE

## Emergency Managers

Emergencies occur with no or little warning, requiring a dynamic and unique set of skills. Students enrolled in Fanshawe's Emergency Management Graduate Certificate program learn how to handle disaster preparedness and coordinate emergency response. The curriculum includes risk assessment theory and mitigation and recovery techniques, while providing practical experience in a variety of formats, including an annual, one-day disaster simulation. The 2019 simulation—a car crash with a chemical spill—required emergency management students to collaborate with learners across programs to manage the disaster. This initiative gives students first-hand experience dealing with highly stressful and quickly-evolving situations like those they will encounter following graduation.

## Wildland Fire Specialists

In 2016, the wildfire in Fort McMurray illustrated the devastation that natural disasters can have on people, communities and the environment. NAIT's Forest Technology Diploma program focuses on how to manage forests responsibly and sustainably, positioning graduates for roles in forest conservation, firefighting and prevention, and forest management. Field training is an important component of this two-year program. First-year students spend time at NAIT's Kidney Lake Camp developing foundational skills in wildfire suppression, plant identification, forest ecology and forest measurements. Second-year students spend time in the Cache-Perotte forest acquiring skills in reforestation, operational planning, sustainable harvesting and reclamation. For graduates like Kevin Martens and Luke Mahura, this training prepared them to serve as wildland firefighters, an important frontline occupation when it comes to keeping Canada's forests, wildlife and communities safe.

## Cybersecurity Experts

As digital innovation accelerates, so must organizations keep up with the changing nature of cyber threats. Facing a constant demand for cybersecurity professionals across the country, Seneca's Cybersecurity and Threat Management Graduate Certificate program is developing a talent pipeline to fill the gap. With a curriculum influenced by some of Canada's largest financial institutions, students learn specialized skills to secure and protect assets, preventing fraud, data breaches and other vulnerabilities. An industry capstone project and an optional work term provide students with hands-on experience that positions them for a career in one of the world's fastest growing fields.

# Keeping Canada Fed

Canada is a global leader in agriculture, food production and the culinary arts. Our farmers and food producers are harnessing innovation, utilizing the latest techniques and technologies to enhance productivity and sustainability. Meanwhile, the pandemic highlighted how important things like food preparation, storage and transportation are to the resiliency and sustainability of supply chains. Considerations associated with health, safety and nutrition are a critical priority to food operations in hospitals, long-term care homes, packaging plants and other industrial settings. The importance of our agricultural and food industries, and the workforce that supports them, has been amplified by the pandemic. Even with much of the world on pause, the agricultural and food production frontline workforce has worked to ensure Canada's food supply chain is not disrupted.

Canada's polytechnics are a key supplier of talent to our food-focused frontline workforce. From those who grow and produce food, to distributors and chefs, polytechnics are ensuring that our food systems across the country are reliable, sustainable, safe and innovative.

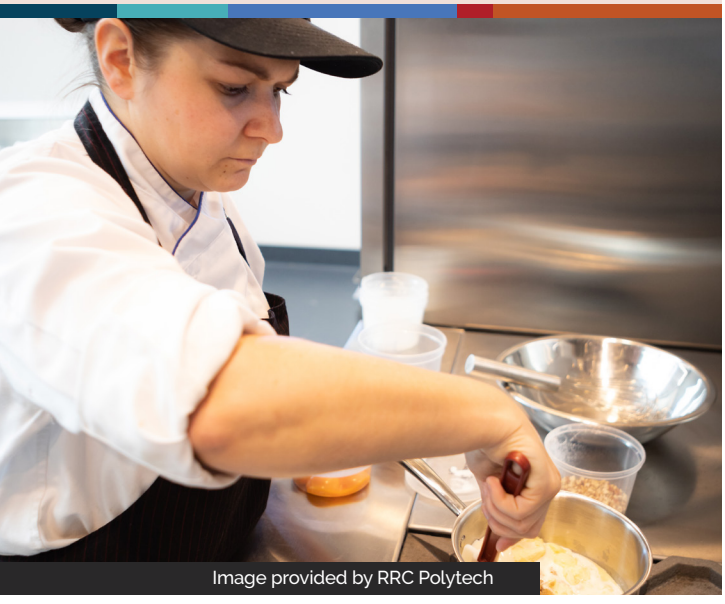

Image provided by RRC Polytech

## Supply Chain Specialists

In the face of unprecedented challenges, Canada's food supply chain experienced minimal disruption in large part due to an often overlooked yet critical frontline occupation. Supply Chain Specialists work behind the scenes to ensure our food is stored and transported safely to customers across the country in a timely fashion. These are the frontline workers that plan and execute the journey from farm to table. Luckily, a steady stream of newly trained graduates from George Brown's Business Administration – Supply Chain and Operations Management Advanced Diploma program stood ready for the task. The skills and knowledge of program graduates are even more critical in times of disruption, including demand management, production planning and market forecasting, and the graduates of George Brown's business program are ideally positioned to deliver.

## Food Researchers & Innovators

Sparking innovation in the culinary sector is a matter of bringing together industry leaders, researchers and student talent. RRC Polytech's Prairie Research Kitchen is a state-of-the-art facility focused on enhancing western Canada's food production industry. Clients leverage the skills of Culinary Arts students, staff and instructors for things like recipe development, food service application testing and consumer research. This research is not only providing learners with valuable experience but delivering significant impacts to industry. Since 2013, RRC Polytech has worked with more than 40 companies on student-led projects to develop new recipes and products. Several partners have already gone to market, with others set to commercialize in the next year, including one offering a lentil-based pierogi that was created as part of a 2018 collaboration. In another initiative with Winnipeg Harvest—a local not-for-profit food distribution and training centre—students worked alongside a research team to transform raw vegetables that may otherwise be deemed unsuitable for market into healthy, high-protein soup mixes.

## Agricultural Equipment Technicians

Canada is a global leader in the production of food, requiring a supply chain supported by an array of talented people. Food producers, for example, rely on those who work alongside them, including agricultural technicians who keep engines running and gears turning on Canada's most advanced farm equipment. In Saskatchewan Polytechnic's Agricultural Equipment Technician Certificate program, learners are taught to diagnose, repair, modify, overhaul, service and maintain some of Canada's most technologically advanced machines—tractors, cultivators, seeders and sprayers. Training prepares learners to work as technicians in a fully equipped service centre or travel to farms and rural areas on service calls. The final two weeks of the program are spent in an agricultural dealership, applying the knowledge they've gained in a workplace environment before graduation.

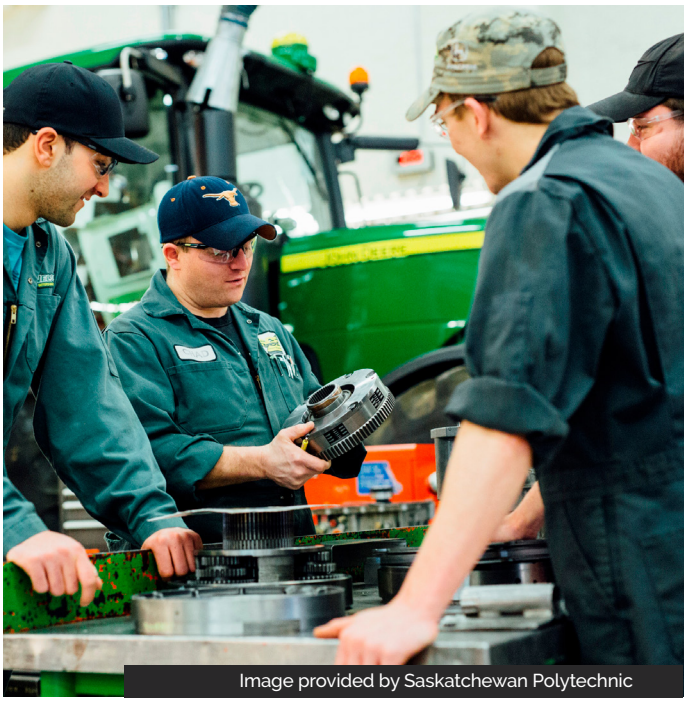

Image provided by Saskatchewan Polytechnic

## Sustainable Farmers

As the global population grows and the climate changes, the sustainability and efficiency of Canada's food system become ever more critical. Kwantlen Polytechnic University is conducting research at the Institute for Sustainable Food Systems with an eye on regional food systems, economics, health and the environment. The results support farmers looking for the tools and knowledge to embrace regenerative, agroecological agriculture, including in major urban areas. Meanwhile, students in KPU's Bachelor of Applied Science in Sustainable Agriculture and Graduate Certificate in Sustainable Food Systems and Security consider agriculture with a lens that includes science, engineering, security and business in the work to create a more sustainable food system.

Image provided by Kwantlen Polytechnic University

# Keeping Canada Connected

As a vast country with a widely dispersed population, keeping Canadians connected to each other is a feat of both engineering and ingenuity. It requires a physical infrastructure that includes roads and railways, telephones and internet, and essential services like water and electricity. Behind Canada's essential infrastructure is a workforce of skilled tradespeople working around the clock to construct, maintain, repair and protect bridges, networks, power stations and pipelines. Because we often take this infrastructure for granted, tradespeople are the unseen and unacknowledged frontline workforce.

Much of the skilled trades talent pipeline flows through Canada's polytechnics. Polytechnics deliver high-quality apprenticeship technical training using innovative delivery methods to support the multidisciplinary nature of today's trades occupations. Because tradespeople are the ultimate problem-solvers, educational institutions must support experimentation and new ideas alongside technology, equipment and expert instruction.

## Sheridan

### Electricians

Electricity underpins just about every aspect of modern life in Canada, yet we often take for granted the safety, sustainability and reliability of our electrical grid when we flip a light switch or charge a device. Sheridan's Electrical Techniques Certificate program encourages learners to enter the trade, providing a foundational understanding of critical electrical systems. This pre-apprenticeship program offers a mix of theoretical and hands-on training to prepare students for full-time apprenticeships, addressing the basics of assembling, installing, connecting, testing and repairing electrical systems. Instruction builds an understanding of the Canadian Electrical Code, electrical theory, electrical trade safety and building permit standards. In addition to providing a pathway to apprenticeship, graduates of the program may choose to transition into a related program like Electromechanical Engineering Technician with advanced standing.

ALGONQUIN COLLEGE

### Water & Wastewater Technicians

Many communities take for granted the everyday miracle of turning on the tap to access a fresh, clean supply of water. During the pandemic, washing your hands has been the most basic of health advice. Algonquin's Water and Wastewater Technician Diploma program equips learners with the knowledge and skills to manage our water and wastewater infrastructure. Subject to increasingly rigid legislation and public health guidelines, water quality professionals must consider waterborne illnesses, industrial waste and wastewater treatment, calling for knowledge of chemistry, biology and mechanical systems. This is a profession that puts "green skills" front and centre, developing a keen understanding of the impact humans have on the environment in which we live.

## Industrial Mechanics

The increasing complexity of machinery in Canadian factories, production plants, distribution centres and recreation facilities necessitates a unique set of technical and problem-solving skills. Upgrading, repairing and maintaining critical equipment requires the expertise of Industrial Mechanics. At SAIT, the Industrial Mechanic Apprenticeship program ensures students have the technical skill and competency to align and test equipment, perform predictive procedures and operate hydraulic and pneumatic systems. Drawing on the interdisciplinary nature of the work, apprentices also learn about a variety of welding techniques and electrical work—dynamic skills that allow them to tackle a variety of jobs on a job site. Graduates are primarily involved in construction or maintenance work, working on the frontlines to ensure the efficient and sustainable operation of critical equipment.

## Automotive Service Technicians

Modern life in Canada relies on cars and trucks for both trade and travel, making automotive service technicians essential to the safe and efficient operation of our vehicles. Considering the increasingly complex mix of cameras and sensors, hybrid and electric engines, and autonomous capabilities, today's technicians must diagnose problems, inspect components and install updates using a combination of hands-on, technical and technological skills. Conestoga's Automotive Service Technician Apprenticeship program supports an industry that is continuously evolving its product line. Students must be able to use a wide range of tools and specialized equipment to respond to the diversity of cars on the road. Curriculum keeps pace with changing environmental standards and health and safety regulations, but also addresses other important elements of the automotive industry, including business practices, customer service and communication.

## Communications Professionals

Before there was such a thing as Zoom fatigue, there were communication technicians to install and maintain wired and wireless networks for consumer and business communications. With an imminent shift to fifth generation (5G) wireless technology, Canada is about to experience faster speeds and more advanced smart devices. Technologists in NAIT's Wireless Systems Engineering Technology program will analyze wireless system requirements, presenting design solutions, installing, testing, commissioning, troubleshooting and maintaining next-generation systems. Meanwhile, apprentices in NAIT's Communication Technician Apprenticeship program are learning to maintain and repair various types of radio frequency, transmission and switching equipment used to provide communication services. Graduates of these programs will be critical to enabling the future of communications in sectors including oil and gas, healthcare, forestry, education and utilities.

# Essential to Economic Recovery

At the height of the COVID-19 pandemic, the country relied on its essential workforce while a large majority of Canadians stayed at home. While the role of doctors, nurses and personal support workers were perhaps the most celebrated, "essential" workers were a much broader group. They were responsible for the systems and supply chains involved with food, water, electricity and internet. They responded to the day-to-day requirements of life in Canada with little recognition because we have come expect basic supplies and services will be available to us. They enabled "work from home"—something that kept countless people employed while millions of others relied on government support. They will be the bedrock of economic recovery in the months and years ahead.

While this publication misses a whole swath of additional occupations that are equally essential—manufacturers, technology providers and service workers among them—we wanted to underline the important role that applied education has played in developing the skills and competencies of people we relied upon, knowingly or not, to keep Canada functioning during the COVID-19 pandemic. Our profound thanks to every essential worker across Canada, regardless of where you studied or the credential you hold.

Image provided by Kwantlen Polytechnic University

## About Us

**Polytechnics Canada** is the voice of leading, research-intensive, publicly supported polytechnics, colleges and institutes of technology. Our mission is policy advocacy for federal action on innovation and skills.

Polytechnics Canada members play a critical role in enhancing Canada's productivity and innovation. Through their facilities and networks, our members provide meaningful solutions to industry problems and accelerate knowledge transfer. Graduates are job-ready and armed with the skills employers need across sectors.

Close ties to industry make the polytechnic talent pipeline dynamic and responsive to the challenges of developing the future workforce. Polytechnics work with industry to build programs and design curricula, to conduct applied research that helps firms scale and get products to market. They offer students work-integrated learning opportunities and position graduates for careers. Beyond the traditional student, polytechnics embrace those at mid-career who find themselves displaced from the labour market or simply need short-term retooling to refine and modernize their skillsets.

At Polytechnics Canada, we are proud promoters of the polytechnic education model—applied, hands-on and technical; industry-focused and industry-driven.

**Learn more at polytechnicscanada.ca.**

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