STRENGTHENING ONTARIO'S DEFENCE CAPACITY

ONTARIO'S UNIVERSITIES
Partnering for a better future

As Ontario navigates an increasingly complex global environment marked by emerging international threats, cyberattacks, technological competition, and public health emergencies, ensuring the province's security and resilience has never been more critical.

Ontario's universities are helping protect the province's people, infrastructure, and economy by training the next generation of engineers, cybersecurity specialists, policy experts, and emergency responders – professionals who will safeguard communities and critical systems. Working with government, industry, and local partners, they are also supporting military-connected learners and strengthening education in public safety and emergency preparedness.

Through cutting-edge research in AI, robotics, aerospace, cybersecurity, quantum computing and more, universities are developing technologies that enhance Ontario's capacity to detect, prevent, and respond to emerging threats.

Below are examples of how Ontario's universities are building talent, advancing research, and fostering collaboration to strengthen the province's defence and security capacity – today and for the future.

Building Ontario's Defence and Security Talent Pipeline

- By exploring power, sovereignty and global relations, **Algoma University**'s Political Science program builds the foundation for defence and security careers. Courses in international relations, Canadian government and political thought give students the tools to analyze complex issues and prepare them for roles in government, public service, diplomacy and defence policy.

- Listeners are getting clearer insights into the forces shaping national and global security through Secure Line, a new **Carleton University** podcast featuring experts in intelligence and security policy. The series strengthens public knowledge and gives students access to real-world discussions that complement their studies in security, policy, and international affairs – critical areas for Ontario's safety and prosperity.

- Through tailored academic accommodations and experiential learning opportunities, the **University of Guelph**'s Serving Scholars program helps students serving in the Canadian Armed Forces balance their studies with military duties – whether that means rescheduling an exam for deployment or offering early course registration to work around training schedules.

- With streams in corrections and community justice services, criminal justice studies, criminology and policing, **Nipissing University**'s Criminal Justice program prepares students for law enforcement careers. Through placements, hands-on projects, and direct engagement with professionals, students gain real-world experience and practical skills in policing and corrections and broader justice sector roles.

- Through creative tools such as strategic foresight handbooks and simulation-based training, **OCAD University**'s Strategic Foresight and Innovation program is training adaptive, future-ready workers skilled in anticipating risks and navigating complex challenges. The program builds leaders whose skills can support decision-making across sectors, including defence, security and public policy.

- To train the next generation of defence leaders, the **Royal Military College of Canada** integrates specialized education and applied research. Its cybersecurity program advances graduate training for the Canadian Armed Forces, while Defence and Strategic Studies examine strategy and human factors in military effectiveness.

- Amid rising cyber threats, **Toronto Metropolitan University**'s Master of Cybersecurity program is preparing graduates and professionals for this high-demand field. With a global cybersecurity workforce gap of 4.8 million, the one-year program blends simulations, case studies, and industry partnerships to prepare students for critical roles in risk management, governance and cybersecurity leadership.

- Aiming to strengthen the province's capacity in law, digital sovereignty, trade, and technology governance, **Wilfrid Laurier University** has launched the Digital Governance Initiative at the Balsillie School of International Affairs. The initiative will establish a made-in-Canada legal advisory centre and advanced professional training programs to prepare professionals for leadership in the digital economy.

- In support of military-connected students, the **University of Windsor** has joined the Canadian Military, Veteran and Family Connected Campus Consortium. By offering flexible scheduling, mentorship and course accommodations, the initiative helps students navigate relocations, deployments and training demands, supporting their academic success.

Strengthening Community Safety and Resilience

Through partnerships with different First Nations across Northern Ontario, **Laurentian University** is advancing research that strengthens community safety and self-sufficiency across Canada's North. Integrating Indigenous knowledge with innovation in AI, robotics, and critical minerals, researchers are developing technologies for safer resource exploration, climate change adaptation, sustainable mineral development, and environmental rehabilitation.

Remote and northern communities could gain faster, more reliable Internet access through a new mobile laser-based system developed in partnership between **McMaster University** Engineering and the National Research Council of Canada. The technology aims to boost data transfer rates and ensure faster, more resilient connectivity in remote and rural regions.

Ontario's defence readiness is being strengthened through **Ontario Tech University**'s ACE Core Research Facility, where aerospace and defence technologies are tested in some of the world's most extreme climate conditions. As a high-security, NATO-DIANA designated test centre, ACE supports the validation of dual-use innovations, advancing safer equipment, stronger preparedness, and enhanced security for communities in Ontario and beyond.

Ontario and Canada's communities are becoming better prepared for emergencies through **York University**'s Victor Phillip Dahdaleh Advanced Disaster, Emergency and Rapid Response Simulation (ADERSIM) Lab and Emergency Operations Centre, which provides modelling and rapid response simulations to large-scale crises such as extreme weather events and public health emergencies. The facility enables governments, first responders, industry and other EOC teams to strengthen coordination, and decision making, enhancing their ability to protect communities when disasters strike.

Advancing Security Through Innovation

As part of a national effort to expand neutron beam research, **Brock University** has partnered with Neutrons Canada to support research in technologies like advanced materials and sensors for defence. The upgraded laboratory infrastructure supports studies in advanced materials, sensors and quantum materials, strengthening capacity for innovation in defence and other critical high-tech industries.

Ontario's critical power systems are becoming more resilient through new technology developed at **Lakehead University** that detects and stops cyber attacks at the physical layer after security mechanisms at the cyber layer have already been breached. This work provides a strong layer of protection that supports energy security and serves as a vital shield for Ontario's key infrastructure.

A new digital tool developed by a **University of Ottawa** student is transforming how the Canadian Armed Forces manage operations. PowerApp streamlines arrival and departure clearances, enhances cybersecurity and supports Ontario's growing pool of skilled digital talent driving innovation in defence and public service modernization.

With a goal to strengthen cybersecurity and protect critical digital infrastructure, a **Queen's University** researcher is advancing innovation in artificial intelligence and high performance computing. By developing next-generation supercomputing and AI frameworks, the work creates a secure digital backbone that enhances resilience, supports defence and research and bolsters innovation across critical sectors.

Research that is helping shape national defence policy is being led by a **Trent University** researcher studying Canada's North. By incorporating Indigenous leadership and local perspectives, the work develops inclusive strategies that enhance security, guide infrastructure investment, and build local capacity, strengthening long-term resilience and safeguarding the interests of communities in the Arctic.

Ontario and Canada's information security is being strengthened through quantum communication research at the **University of Toronto**. By developing technologies that protect sensitive defence and critical infrastructure signals and collaborating with international partners, including satellite networks, this work enhances secure long distance communication and bolsters national defence capabilities.

The **University of Waterloo** startup Alchemy turned a student project into a thriving startup that has developed a camouflage coating used by the Canadian Armed Forces. Rated 95/100 by the CAF, this DRDC IDEaS developed, made-in-Ontario technology counters emerging surveillance threats and enhances operational effectiveness.

A new low-cost satellite tracking network developed at **Western University** is giving Canada unprecedented coverage of its skies. Capable of detecting meteors and objects over 30 cm, the system enhances national security and space awareness across the North, and delivers advanced monitoring at a fraction of traditional system costs.