

Aerospace and Defence Research



As global defence and security challenges become increasingly complex, from cyber threats and autonomous systems to geopolitical instability and space-based technologies, the need for agile, multidisciplinary research has never been more urgent.

Policy Expertise

With a strong foundation in applied science, engineering, health, and policy research, UCalgary is uniquely positioned to support dual-use innovation, contribute to defence technology development, and help shape evidence-informed security policy.



Centre for Military, Security and Strategic Studies (CMSS)

This leading research centre is committed to promoting and developing excellence in Military, Security and Defence Studies. It has an impact that exceeds its size with regard to defence and security issues in Canada and internationally.



Arctic Institute of North America (AINA)

As Canada's first and longest-lived Arctic research institute, AINA works in partnership with northern and Indigenous organizations, researchers, governmental and non-governmental institutions and all others interested in Arctic issues from across Canada and around the world.



Leader in Commercialization

UCalgary is Canada's entrepreneurial university and a top five research institution; we create the skills, the talent and bold ideas to prepare the workforce of today, tomorrow and Alberta's future economy. A top startup creator, UCalgary has produced more than 105 companies in the last six years.

UCalgary's Investment

Funding is broadly distributed across key national security themes, with the largest investments in situational awareness, Arctic security, and human performance – areas strongly aligned with federal defence priorities. Over the past 5 years, 34 UCalgary researchers have received a total of \$27.4M supporting 71 projects from defence & space specific funders.

\$31M

in funding from the Canadian Space Agency*

\$5.2M

in funding from the Department of National Defence*

\$78M

in tri-agency funding for projects that could be applied to defence research**

*2013-2025 | **2014-2023

UCalgary continues to lead in defence innovation through partnered research projects including cybersecurity, quantum, Unmanned Aerial Vehicles (UAVs), remote sensing, and dual-use technologies.

Strategic Partnerships

Many of UCalgary's defence projects involve collaborative partnerships with other Canadian academic and for-profit institutions.

Funded through a \$7M Government of Alberta Major Innovation Fund (MIF), Space-Defence Technologies Alberta (SDTech AB) is a pan-Alberta innovation framework developed in partnership with four other Alberta post-secondary institutions. Researchers are collaborating with over 25 companies in joint academic-industrial partnerships to deliver disruptive solutions and train the next-generation skilled workforce.

Science and Innovation

As Canada's leading university for space-related research funding, UCalgary faculty continue to build on their successes by pursuing defence-related funding opportunities including recent applications to the Canadian Safety and Security Program (CSSP) offered by DRDC, as well as the DND Innovation for Defence Excellence and Security (IDeAS) program.



Dual-Use Technologies: The defence landscape is similarly transforming, as the strategic character of space becomes recognized as an operational domain and competitive advantage is pursued through the exploitation of civilian-military synergies.



Cybersecurity: A founding member of the National Cybersecurity Consortium (NCC), UCalgary is actively leading Canada's tech sector in terms of strategy and policy around cybersecurity in research.



Quantum Science: UCalgary is a Canadian hub for quantum science and technology. In alignment with Canada's National Quantum Strategy, the Quantum City initiative works with partners such as Mphasis, Decentralised Energy Canada and Distriq.



Unmanned Aerial Vehicles (UAVs): Projects include robotic machining, control and deployment within confined spaces, human-collaborative robots, and radio frequency links for UAV applications. Groups working in this space include the UVS Robotarium, and the Intelligent Automation Research Laboratory.



Global Navigation Satellite Systems
UCalgary is catalyzing Calgary's aerospace ecosystem through partnerships like the Aerospace Innovation Hub, which is supporting the development of next-generation aerospace and advanced manufacturing technologies.



Drone and Counter-Drone Technology

Dr. Paul Zaid, PhD

Hypersonic Propulsion Systems Used For Precision-Guided Counter-Drone Missiles



Anti-Spoofing for Cybersecurity

Dr. Susan Skone, PhD

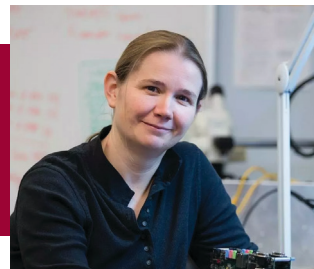
GNSS Anti-Spoofing Solution For Resilient Autonomous Positioning, Navigation and Timing (1b)
DND - IDeAS



Robots for High-Risk Rescue Operations

Dr. Alejandro Ramirez-Serrano, PhD

2 Uncertainty-Aware Highly Maneuverable Robots For High-Risk Security Operations In Complex Spaces
DND - IDeAS



Remote Sensing Space Environments

Dr. Emma Spanswick, PhD

Geospace Dynamics Constellation-Ground (GDC-G) sensor network
CFI-JELF