

Skills and Innovation in the Advanced Manufacturing Sector

Colleges and institutes support innovation in manufacturing

This highly technical sector requires a mix of hands-on experience and theoretical knowledge to constantly refine existing processes. Colleges and institutes play a critical role in supporting this development. They train skilled technicians and tradespeople ready to work with the latest technologies and provide valuable expertise to businesses looking to test new ideas or processes.



Education and Training

From engineers to technicians, colleges and institutes provide training to a wide variety of workers occupying essential positions in the advanced manufacturing sector.

Over **77,300** companies in Canada are involved in the advanced manufacturing sector¹



CICan member colleges and institutes across Canada offer over

380

programs related to

advanced manufacturing

leading to a **variety of credentials**, including:

190+
Diplomas

110+
Certificate Programs

15+
Degrees²

70+
Post-graduate
Certificates or Diplomas

Popular Programs



Engineering

- Mechanical Engineering Technology and Technician
- Chemical Engineering Technology
- Electrical Engineering Technology and Technician
- Electro-Mechanical Engineering Technician



Robotics and Automation

- Automation
- Robotics
- Manufacturing Engineering



Transportation

- Aviation Technology
- Aviation Management
- Aerospace Manufacturing
- Aircraft Maintenance Engineer
- Aircraft Turbine Technician
- Marine Engineering and Management

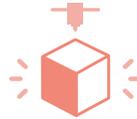
Applied Research and Innovation

Colleges and institutes have extensive expertise in applied research that is especially relevant to advanced manufacturing, and can offer access to specialized labs where new processes and manufacturing processes are regularly refined.

Over **120 college-based research centres and laboratories** are dedicated to improving manufacturing processes across the country. This includes centres such as:



The *Centre technologique en aérospatiale (CTA)* at **Cégep Édouard-Montpetit (QC)** is one of Canada's leading research centres in the aerospace sector and supports a variety of companies looking to build or test new materials and airplane components.



Canadore College's (ON) Innovation Centre for Advanced Manufacturing and Production (ICAMP) provides direct, cost-effective access to the latest in advanced manufacturing technology and expertise including 3D scanning, printing and modelling.

There are currently over **135 applied research projects³ in advanced manufacturing** across the country. All are conducted in collaboration with local businesses and employers, the majority being small or medium-sized enterprises. Examples include:



Centennial College (ON), in collaboration with PodoTech and the University of Waterloo developed software and hardware to manufacture custom-made shoes using 3D scanning and modelling.



Red Deer College (AB) worked with local company Dakota Supplies to design and produce a prototype of Moppitt, a small all-in-one cleaning tool geared towards to the airline industry.



Spotlight

By providing access to **specialized labs and equipment**, colleges and institutes are able to test new products and manufacturing processes that improve the productivity of businesses.



Red River College (MB) used high-speed imaging to help Parker Hannifin fix problems with the assembly of circuit boards.



Camosun College (BC) specialists manufactured seating solutions for the Canadian Sledge Hockey and Canadian Wheelchair Rugby teams.



¹Using the North American Industry Classification System (NAICS), we include in Advanced Manufacturing all manufacturing sectors except Computer and Electronic Product Manufacturing, Pharmaceutical and Medicine Manufacturing, and Food Manufacturing. See Industry Canada. "Canadian Industry Statistics," <https://www.ic.gc.ca/app/scr/app/cis/search-recherche> for details (accessed Summer 2017).

²Includes degree pathways.

³Research project data taken from Colleges and Institutes Canada's "Applied Research Survey," 2015-16.