

# CAREERS OF THE FUTURE .CA

How to Introduce Your Students  
to Advanced Manufacturing

## Who is NGen?

Next Generation Manufacturing Canada - NGen for short - is a not-for-profit organization that leads Canada's Advanced Manufacturing Global Innovation Cluster. We aim to help promote Canada's strengths in advanced manufacturing at home and around the world, connect and build collaboration in support of advanced manufacturing across Canada, support collaborative projects in leading technology applications in manufacturing, help small companies adopt technology and scale up, and develop the advanced manufacturing workforce of the future.

## What is an Innovation Cluster?

NGen is the industry-led, non-profit organization leading Canada's Global Innovation Cluster for Advanced Manufacturing. One of five national networks supported by Canada's ambitious Global Innovation Clusters Initiative. NGen is founded on the principle that digital transformation in advanced manufacturing will enrich the lives of Canadians, delivering better products and good jobs while generating the economic growth essential to a better future.



## About



Careers of the Future is an initiative led by NGen on behalf of Canada's advanced manufacturing Global Innovation Cluster. The initiative is meant to educate young Canadians on the advanced manufacturing sector, showcase the limitless career opportunities within advanced manufacturing and how they can kick-start their career journey today.

## More Resources and Information →

To learn more about NGen and Canada's advanced manufacturing opportunities, visit [ngen.ca](https://ngen.ca). For more information about the Careers of the Future initiative, visit [careersofthefuture.ca](https://careersofthefuture.ca)

# Advanced Manufacturing in Canada

## What is advanced manufacturing?

Advanced manufacturing combines science and technology with manufacturing capabilities to improve how we make things, leading to new and better products that are unique, smart, cleaner, and often autonomous. Advanced manufacturing enterprises don't just assemble or make things; they use cutting edge technologies, business and engineering know-how, software, data analytics, and artificial intelligence to solve problems - and address some of the world's most pressing challenges. Some of the industries that are at the forefront of advanced manufacturing in Canada include biomanufacturing and medical technologies, clean and autonomous vehicles, aerospace, robotics and automation, agrifood and agricultural equipment, textiles, electronics, 3D printing, and more. Why is advanced manufacturing important? Because it builds things better, safer, cleaner, and more productively for a better world.

## What is the impact of advanced manufacturing in Canada?

Advanced digital, materials, and production technologies and next-generation manufacturing capabilities are revolutionizing how products and components are designed, manufactured, distributed, used, and recycled across a spectrum of industries. Developments in robotics, automation and technologies such as machine learning and additive manufacturing (3D printing), have far-reaching application in Canada's economy, including aerospace and defense, automotive, agriculture and pharmaceuticals. Canadian innovators are producing a diverse range of technologically complex, high-value products for domestic and competitive global markets.

## What do careers in advanced manufacturing look like?

Traditionally, when you think of Manufacturing, an old-school image may come to mind: workers in overalls and work boots standing around a conveyor belt in a steely, warehouse, factory type environment. However, that is an image of the past. Today advanced manufacturing is clean, safe, highly automated, and encourages young people with the creativity and problem-solving capabilities to get involved and make things better. While a majority of careers require STEM based courses and experiences, there are several career paths one can take while trying to get into the industry. The more tactical, hands on careers of advanced manufacturing can include building, designing and creating technologies, the skilled trades, business, machines, computers and other technological innovations, such as robotics and artificial intelligence. On the scientific side, you may have the chance to develop cleantech and clean energies, as well as developing new medical products such as vaccines and more. However, as previously mentioned, advanced manufacturing can really incorporate many more types of work within the industry: art and design, marketing and communications, writing, publishing and editing. Contrary to popular belief, advanced manufacturing is not just machines and conveyor belts. It requires a dedicated group of working individuals to develop, create, execute and deploy the multitude of products that are manufactured within the industry. It's about ideas and creativity, technique and ingenuity, how technologies are used to make customized things, that will create the career opportunities of the future. No matter a student's skills, interests, passions or strengths, there is an opportunity waiting for them within advanced manufacturing.

## What schools offer advanced manufacturing courses? →

For further information on the programs offered by these institutions, [visit our Pathways page.](#)



# Information for Parents

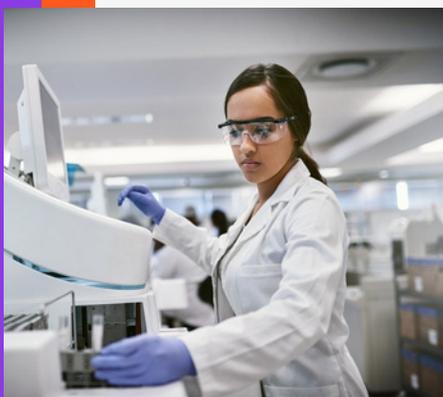
Parents are bound to have questions about advanced manufacturing as a potential career path for their children. Here are some tips to help answer them and facilitate discussions at home.

## Why should my child consider a career in advanced manufacturing?

Advanced manufacturing has the potential to provide your child with an exciting, life-long career in a path of their choosing, where they can truly help make a difference in the world. The sector offers an impressive diversity of jobs. Opportunities exist in design, research, marketing, digital development, and growing/launching companies, all of which contribute to building a bright future for advanced manufacturing in Canada. These jobs are constantly evolving, requiring people to learn new skills and consider new ideas, while helping to make the world a better place. Parents will also be pleased to know that working in the sector is safe, secure, well-paying, and fulfilling.

## How can my child get into advanced manufacturing?

There are many ways to pursue a career in advanced manufacturing. A majority of post-secondary institutions across Canada offer a wide selection of related courses, including specialized technological learning and more generalized education. Many of these institutions provide real-life, hands-on training to help further prepare students for working in the industry. Advanced manufacturing will require students to have the required grades that fall within STEM-based courses. Science, Technology, Engineering and Math. The sector offers a diversity of jobs. Opportunities exist in design, research, marketing, digital development and growing/launching companies which all contribute to building an amazing future for advanced manufacturing in Canada.



To learn more about post-secondary schools offering programs and courses related to advanced manufacturing, as well as the programs most suited to your child's interests, visit [careersofthefuture.ca/pathways](https://careersofthefuture.ca/pathways). Students and their parents can learn more about exploring a career in advanced manufacturing at [careersofthefuture.ca](https://careersofthefuture.ca).



# Pathways and Programs

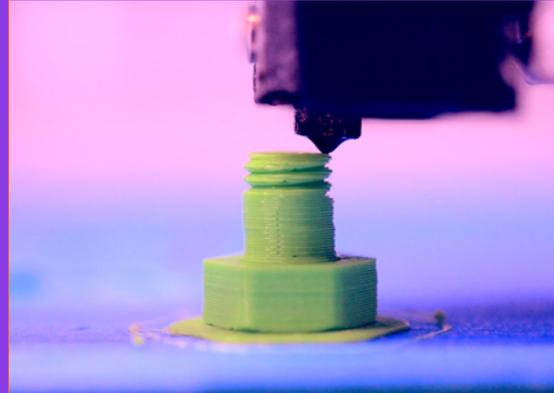
Check out [careersofthefuture.ca](https://careersofthefuture.ca) to explore Pathways, Programs, and Interviews. Featuring content about educational programs for K to 12 and post-secondary institutions, along with interviews with industry professionals, and youth engagement opportunities.

## Why should students learn about careers in advanced manufacturing?

When you integrate new technology into manufacturing, the potential to help people and solve problems is limitless. That's what makes a career in advanced manufacturing so fulfilling. New technologies like 3D printing, AI and robotics are improving how we make things, and inspiring new products and industries by:

- Delivering product and process innovation toward clean, sustainable, flexible manufacturing
- Solving productivity, health & safety, and sustainability challenges
- Building future supply chains
- Evolving agricultural production
- Solving global challenges like how to meet energy demands through marine renewable energy, fisheries, aquaculture, oil & gas, defence, shipbuilding, and transportation

Opportunities exist in accounting, marketing, sales, and human resources, which all contribute to building a bright future for advanced manufacturing in Canada. These jobs are constantly evolving, requiring people to learn new skills and consider new ideas, while helping to make the world a better place. You can choose a path in medical, healthcare, energy, transportation, and agriculture, to name a few.



## Fun Facts

Advanced manufacturing is responsible for some of the world's greatest inventions and plays a big role in our everyday lives. From the Canadarm to our smart phones, advanced manufacturing is propelling us into the future.

## Build Beats

Build Beats is a continuous, soothing loop of advanced manufacturing footage from the Humber Barrett Centre of Technology—crafted to relax, focus, and study to. Ready to feel the rhythm? Tap into the loop [here](#).



# Traditional Manufacturing, Advanced Manufacturing and STEM

## Traditional Manufacturing

### Traditional Manufacturing

Converts raw materials into ready-to-sell products using manual and/or mechanized transformational techniques.



CARS



STEEL



CLOTHING



**STEM**  
(Science, Technology, Engineering+Math)



## Advanced Manufacturing

Marries traditional manufacturing and STEM to develop advanced techniques and equipment that helps create better products and improve efficiencies in industries like transportation and healthcare.



SELF-DRIVING CARS



WEARABLE TECHNOLOGY



ROBOTS

### STEM

Integrates Science, Technology, Engineering and Math into a single, cross-disciplinary program with real-world applications.



DATA & ANALYTICS



COMPUTER PROGRAMMING



ENGINEERING

## Contact Us



For more information, reach out to [careersofthefuture@ngen.ca](mailto:careersofthefuture@ngen.ca).

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