



# Advanced Manufacturing Skills in High Demand

## Be Prepared for SE Wisconsin's New Economy

The subtle change in manufacturing and the economy of Southeastern Wisconsin is now rapidly accelerating as employers moving to the area are creating hundreds and thousands of jobs.

These new operations apply the principles of Industry 4.0, otherwise known as Advanced Manufacturing. Employers are hungry to hire individuals who are developing those advanced skills. Move to the front of the line with a degree or diploma in a high-demand career in a facility utilizing Advanced Manufacturing.

**Industry 4.0:** The current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of things, cloud computing, and cognitive computing.

**Industry 4.0** creates “smart factories”. Within the modular-structured smart factories, cyber-physical systems monitor physical processes, create a virtual copy of the physical world and make decentralized decisions.

**Cyber-Physical System (CPS):** Mechanism controlled or monitored by computer-based algorithms, tightly integrated with the internet and its users. Examples of CPS include smart grid, autonomous automobile systems, medical monitoring, process control systems, robotics systems, and automatic pilot avionics.

**CPS** involves transdisciplinary approaches, merging theory of cybernetics, mechatronics, design and process science.

**Internet of Things (IoT):** The network of physical devices, vehicles, and other items embedded with electronics, software, sensors, actuators, and network connectivity which enable these objects to collect and exchange data

**The IoT** allows objects to be sensed or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human intervention

\*Edited definitions from Wikipedia.org

## Advanced Manufacturing/Industry 4.0 is embraced by cutting edge manufacturers

Today’s manufacturers are integrating information technology capabilities and data with manufacturing operations to improve quality, productivity, and inventory and to better ensure their products meet customer demands.

While advanced manufacturing means automating certain processes that a person may have once completed, it has created a shift in which types of careers are in great demand. Today’s manufacturers desire individuals with programming, mechanical design, electronics, and electrical engineering skills.

The Industry 4.0 “revolution” originates in Germany. The industrial revolution in the early 1900s saw many manual jobs become mechanical, then grew to a mass production/assembly line approach. More recently, many manufacturing processes became automated. Cyber-physical systems are considered the next step. Industry 4.0 is characterized by strong customization of products under the conditions of highly flexible mass production.

## Gateway Programs of Study to Prepare for a Career in Industry 4.0

Graduates who understand both information technology and manufacturing systems will have the highest career potential in Industry 4.0 operations. Gateway offers a wide selection of degree, diploma, and certificate programs ([gtc.edu/careers](http://gtc.edu/careers)) in manufacturing, engineering, and information technology to help you prepare for the rapidly growing demand for these skills and knowledge.

- Advanced Manufacturing Technology
- Supply Chain Management
- Electrical Engineering
  - Concentration available in Biomedical Engineering Technology
- Mechanical Design Technology
- Electronics
- CNC Programmer
- Tool and Die Technician
- Electromechanical Maintenance Technician
- Programming for Manufacturing
- Information Technology (IT)-Software Developer
- IT-Network Specialist
- IT-Computer Support Specialist

## Why Gateway

**Gateway partners with companies that produce Industry 4.0 products and intelligence and companies utilizing 4.0 principles in their operations.**

- Gateway has been at the table with new manufacturing companies as they decide on locating their plants within Southeastern Wisconsin. Many have publicly stated they chose Southeastern Wisconsin because of Gateway’s workforce training capabilities. They are partnering with Gateway to develop the curriculum that prepares graduates for jobs at their companies.
- In addition to Gateway’s degree programs, its Business and Workforce Solutions department provides:
  - Boot Camp (short term — less than 4 months) training for entry-level positions in high-demand careers in cooperation with Workforce Development Centers and employers
  - Employers with training customized to meet their employee-training requirements. Training can be conducted at Gateway or the employer’s site.
- Gateway operates two manufacturing and engineering centers with the latest in equipment selected by area employers.
  - Gateway’s SC Johnson integrated Manufacturing and Engineering Technology (iMET) Center in Sturtevant also hosts a FAB LAB 3D printing facility, flexible manufacturing lab, and a mechatronics lab.
  - The Reader Precision Machining (RPM) Manufacturing Center on Gateway’s Elkhorn Campus has the latest CNC equipment including Swiss Screw precision machining units. All-new engineering technology labs have also been recently completed.



Contact Gateway to build your advanced manufacturing career with Industry 4.0 skills.

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