



ADVANCED MANUFACTURING

PROGRAM OVERVIEW



Manufacturing is the production of products for use or sale using labor and machines, tools, chemical, and biological processing, or formulation.

Manufacturing can come in many different forms from handicraft to high tech, but is most commonly applied to industrial production where raw materials are transformed

into finished goods on a large scale. Such finished goods may be used for manufacturing other, more complex products, such as aircraft, household appliances, automobiles, or sold to wholesalers, who in turn sell them to retailers, who then sell them to end users and consumers.



CAREER OPPORTUNITIES

- **CNC Machinist: Mill & Lathe**
- **CNC Programmer**
- **Tool Maker**
- **Mold Maker**
- **Optics Technician**
- **Machinist**
- **Quality Inspector**
- **Mechatronics Technician**
- **CNC Set-up**
- **CNC Machine Operator**
- **Machine Operator**



POST-SECONDARY EDUCATION OPPORTUNITIES

- **Monroe Community College:**
 - » **Tooling and Machining Certificate Programs**
 - » **Associates Degrees:**
 - **Tooling and Machining**
 - **Optics**
 - **Mechatronics**
 - **Mechanical Technology**
- **Alfred Technical College:**
 - » **Associate in Machine Tool Technology**
 - » **Associate in Mechanical Technology**





PROGRAMS OF STUDY

FOUNDATIONAL COURSES

CTE Foundations: Manufacturing

9th Grade // 1 CTE Credit

Career Research and Exploration

Safety, Tools, and Materials

Basic Manufacturing and Metalworking

Introduction to Integrated Technology

10th Grade // 2 CTE Credits

Rotation of Experiences in Metalworking

Automotive Technology, Advanced

Manufacturing, Engineering and Optical Technology

CAREER MAJOR COURSES

Manufacturing I

11th Grade // 2 CTE Credits

Layout of Part for Processing

Independent and Collaborative (w/Colleagues)

Operation of Machine Tools

Understanding of Machining Processes, Use of Computer-Based Manufacturing – CADD/CAM, CNC, Additive Manufacturing

Manufacturing II

12th Grade // 2 CTE Credits

Continued Growth Using Manual Machines and Manufacturing Processes

Design Own Projects

Advanced Use of CADD/CAM Software

Setup and Operate CNC Equipment

Demonstrate Understanding of Metals and Materials Used in Manufacturing



EMPLOYABILITY PROFILE:

The Proficient Advanced Manufacturing Student will...

- Demonstrate employability skills that will help them get a job and meet employer's professional expectations.
- Demonstrate academic knowledge and skills that meet postsecondary requirements.
- Consistently demonstrate safe practices and healthy relationships.
- Properly select, use, store, and maintain all tools and equipment.
- Effectively read a variety of materials and communicate in a variety of situations.
- Accurately solve mathematical calculations, and apply geometric concepts, in context.
- Accurately measure within industry-standard tolerances.
- Demonstrate GRIT. Persevere through challenges and not give up.
- Work and maintain a safe work environment. Apply safety in the work and educational setting.
- Understand, plan, and write manufacturing processes.
- Measure accurately to industry standard tolerances and surface finish requirements.
- Use and operation of power saws.
- Effectively perform drilling using a drill press or milling machine.
- Effectively perform different forms of grinding.
- Operate a vertical milling machine.
- Perform bench work.
- Effectively set-up and operate Computer Numerical Control (CNC) Equipment
- Plan, write, interpret and troubleshoot CNC programs.
- Interpret and extrapolate information from blueprints and drawings.
- Demonstrate the understanding of the basics of different types of materials their properties and uses.(i.e. Ferrous, non ferrous metals, wood, plastics)