



WELDING

PROGRAM OVERVIEW



Students in the Welding 1 & 2 Program will study the equipment and techniques used for the welding processes most often used in today's industry, including plasma cutting, oxyfuel gas cutting and welding, Gas Metal Arc Welding (GMAW), Arc Welding (SMAW), and Gas Tungsten Arc Welding (GTAW) over a two year period. Flat horizontal and vertical welding positions on basic joints will be practiced.

Pipe and tube welding will be introduced in year two. Classroom instruction will also include career exploration, safety, design, print reading, welding theory, shop math, communication and organizational skills, along with an introduction to welder certifications. As students become proficient in all welding areas, they will have the opportunity to work on class projects and design their own final project.



CAREER OPPORTUNITIES

- **Boilermaker**
- **Pipefitter**
- **Iron Worker**
- **Sheet Metal Workers**
- **Structural and Pressure Vessel Welding**
- **Fabrication, Manufacturing, and Production Welder**
- **Auto Body Welder**



POST-SECONDARY EDUCATION OPPORTUNITIES

- **Monroe Community College:**
- **Alfred Technical College:**
- **Rochester Arc and Flame**





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

Welding I

11th Grade // 2 CTE Credits

Safety with cutting and welding

Portfolio development

Welding, math, joints and positions

Plasma Arc Cutting

Equipment and supplies

GMAW welding

OxyFuel welding and cutting

SMAW and GTAW welding

Intro to pipe welding

Welding II

12th Grade // 2 CTE Credits

Industry Safety

Physics and math of welding

Flux core welding

Print reading and design

Welding symbols

Advantages of Flux core

Out of position welding

Vertical up stick

Pipe prep and weld



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).