Utica Community Schools in partnership with

Macomb Community College

Presents: School Day - **Dual Enrollment for Welding**

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| **Year 1** | **Year 2** |
| **Fall** | **Fall** |
| ATWD 1110 – Fundamentals of Gas & Arc  Welding  Credit Hours: 2.00  ATWD 1140 – Gas Metal Arc Welding (MIG)  Credit Hours: 2.00 | ATWD 1160 – Advanced Welding & Welder  Certification (SMAW)  Credit Hours: 3.00  ATMT 1300 - Metallurgy-Characteristics of Ferrous Metals  Credit Hours: 2.00 |
| **Winter** | **Winter** |
| ATWD 1130 – Shielded Metal Arc Welding I (SMAW)  Credit Hours: 2.00  ATWD 1150 – Gas Tungsten Arc Welding  (TIG)  Credit Hours: 3.00 | ATWD-1161 – Advanced Welding & Welder  Certification (GMAW)  Credit Hours: 3.00  ATMT 1310 - Metallurgy-Characteristics of Non-Ferrous Metals  Credit Hours: 2.00 |

**ATWD 1110 – Fundamentals of Gas & Arc Welding:** The student will learn how to set up and operate gas welding and shielded metal arc welding equipment and safely function in a welding shop. The student will learn how to weld various joints using gas welding and arc welding processes in the flat position.

**ATWD 1140 – Gas Metal Arc Welding (MIG):** The student will learn how to write procedures, fabricate sample welds using the GMAW process of the basic joints in the flat position. These welds are to be made in various thicknesses of steel and aluminum. The testing of these welds should be in accordance with A.W.S. procedures.

**ATWD 1130 - Shielded Metal Arc Welding 1 (SMAW)**: The student will learn how to set up, select electrodes and operate arc welding equipment and safely function in a welding shop. The student will learn how to pass an open-butt joint in the flat position tested in accordance with A.W.S. procedures.

**ATWD 1150 – Gas Tungsten Arc Welding (TIG):** The student will learn how to set up and safely operate the GTAW welding equipment, select the proper filler material and welding procedure, and weld shielding gas. The student will learn how to pass bend test of groove joints in steel and aluminum using different filler metal, metal thickness, and shielding gases in the flat position. The weld tests are to be done in accordance with the A.W.S. procedures.

**ATWD 1160 – Advanced Welding & Welder Certification (SMAW):** The student will learn how to write welding procedures, fabricate sample weldments in the vertical and overhead positions in the SMAW process. The testing of the welds shall be in accordance with A.W.S. procedures and welding codes. The student will receive welder certification upon completion of the welding tests within the requirements of the welding codes.

**ATMT 1300 - Metallurgy-Characteristics of Ferrous Metals**: The student will gain an understanding of the production structure and application of ferrous metals. This includes properties of ferrous metals, production of steel, cast iron, and a general background in basic heat treatment of steel.

**ATWD-1161 – Advanced Welding & Welder Certification (GMAW):** The student will learn how to write welding procedures, fabricate sample weldments in the vertical and overhead positions in the GMAW process. The testing of the welds shall be in accordance with A.W.S. procedures and welding codes. The student will receive welder certification upon completion of the welding tests within the requirements of the welding codes.

**ATMT 1310 - Metallurgy-Characteristics of Non-Ferrous Metals**: The student will gain an understanding of metals and their application. Topics covered: non-ferrous metals, theory of alloys, physical metallurgy, aluminum, magnesium, copper, bearing metals, die casting, powder metallurgy, surface treatment, new metals and applications, and welding metallurgy.

**These courses are designed to prepare students for success in careers in advanced manufacturing across many industries**, including automotive die/mold, medical, aerospace, defense, renewable energy, “green” technologies, and consumer products. This program is ideal for those who enjoy working with their hands.

**Students are required to drop two UCS courses to participate in this School Day - Dual Enrollment for Welding. Transportation will be provided by UCS, and you be back at your high school prior to the end of the school day.**