

Manufacturing Cluster

Welding & Metal Fabrication

Plate Roller Operator – This major prepares students as plate roller operators who operate rolling machines to shape and form metal stock into parts or products. Students learn fundamentals of plate rollers operations and metal characteristics, preparation and heat treatments, and detailed drawings along with a more in-depth focus on plate roller setup, specifications and operating procedures. Additional instruction in bar, angle and cone bending techniques and various bending methods are included as well as work-site experience (WSE).

Manufacturing Specialist – Robotic Welding Operational Technician – This major prepares students as robotic welding operational technicians who monitor, setup and perform basic programming and maintenance functions on robotic welding equipment in manufacturing environment. Students receive an overview of safe operation of manufacturing equipment in the areas of precision metal fabrication, welding, machine tool, CNC, computer aided drafting and pre-engineering. Instruction includes an emphasis in robotic welding operation and programming with a focus on control panels and operating stations, blueprints and detailed drawings, codes and specifications, and work-site experience (WSE) that develops proficiency skills.

Manufacturing Specialist – GTAW Pipe Welder – This major prepares students as GTAW pipe welders in a variety of manufacturing environments. Students receive an overview of safe operation of manufacturing equipment in the areas of precision metal fabrication, welding, machine tool, CNC, computer aided drafting, and pre-engineering. Included are blueprints, detailed drawings and welding codes, metal prep and heat treatments, and oxyfuel/plasma arc cutting with an emphasis in Gas Tungsten Arc Welding (TIG) pipe and structural welding techniques.

Cutting Processes Technician – This major prepares students for entry level welding employment where they will set up and operate welding cutting equipment to make straight line, curve, bevel and gouging cuts. Instruction includes welding theory, fabrication, layout, print reading, welding symbols along with metal pre-preparation and heat treatments. Students also receive training in basic cutting processes including plasma arc, air carbon arc and oxyfuel.

GMAW Structural Welder – This major prepares students to do quality structural welding on steel in structural fabrication and manufacturing shops. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with an emphasis in Gas Metal Arc Welding (MIG) techniques. GMAW welders specialize in performing MIG welds in accordance with welding procedure specifications.

GMAW Pipe Welder – This major prepares students to do quality pipe welding on vessels and petroleum products. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with an emphasis in Gas Metal Arc Welding (MIG) techniques. GMAW welders specialize in making quality MIG welds in accordance to welding procedure specifications.

GTAW Structural Welder – This major prepares students to do quality structural welding on thin sections of stainless steel and light metals. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with an emphasis in Gas Tungsten Arc Welding (TIG) techniques. GTAW welders specialize in welding stainless steel, nickel alloys, titanium, aluminum, brass, bronze and even gold.

GTAW Pipe Welder – This major prepares students to do quality pipe welding on vessels and petroleum products. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with an emphasis in Gas Tungsten Arc Welding (TIG) techniques. GTAW welders specialize in making quality GTAW root welds in accordance with welding procedure specifications.

SMAW Structural Welder – This major prepares students to do quality structural welding in construction or as a structural steel fabricator. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with an emphasis in Shielded Metal Arc Welding (stick) techniques. SMAW welders specialize in performing quality welds in accordance with welding procedure specifications both in welding shops and in the field.

SMAW Pipe Welder – This major prepares students to do quality pipe welding on vessels and petroleum products. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with an emphasis in Shielded Metal Arc Welding (stick) techniques. SMAW welders specialize in performing quality SMAW welds in accordance to welding procedure specifications.

FCAW Structural Welder – This major prepares students to do quality structural welding on steel in structural fabrication and manufacturing shops. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with an emphasis in Flux-cored Arc Welding (FCAW) techniques. FCAW welders specialize in performing welds in accordance with welding procedure specifications.

FCAW Pipe Welder – This major prepares students to do quality pipe welding on vessels and petroleum products. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with an emphasis in Flux-cored Arc Welding (FCAW) techniques. FCAW welders specialize in performing quality FCAW welds in accordance to welding procedure specifications.

Structural Welder – This major prepares students to do quality structural welding in construction or in the petroleum industry. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with specialized instruction in Shielded Metal Arc Welding (stick), Gas Metal Arc Welding (MIG), Flux-cored Arc Welding (FCAW), and Gas Tungsten Arc Welding (TIG) techniques. This major offers specialized preparation for structural certification by the American Welding Society (AWS).

Pipe Welder – This major prepares students to do quality pipe welding in construction or in the petroleum industry. Instruction includes welding theory, fabrication, layout, print reading,

welding symbols, math and welding codes with specialized instruction in Shielded Metal Arc Welding (stick), Gas Metal Arc Welding (MIG), Flux-cored Arc Welding (FCAW), and Gas Tungsten Arc Welding (TIG) techniques. This major offers specialized preparation for pipe certification by the American Welding Society (AWS).

Structural & Pipe Welder – This major prepares students to do quality pipe and structural welding in construction or structural steel fabrication or in the petroleum industry. Instruction includes welding theory, fabrication, layout, print reading, welding symbols, math and welding codes with specialized instruction in Shielded Metal Arc Welding (stick), Gas Metal Arc Welding (MIG), Flux-cored Arc Welding (FCAW), and Gas Tungsten Arc Welding (TIG) techniques. This major offers specialized preparation for both structural and pipe certification by the American Welding Society (AWS).

Service Careers – Metal Fabricator Assistant – This major introduces students enrolled in Service Careers programs to entry level jobs in the welding and metal fabrication industry. Students will be introduced to the safe practices, use of tools and equipment, and basic welding skills required to be a metal fabricator’s assistant. Included are basic Shielded Metal Arc Welding (stick) welding methods along with Gas Metal Arc Welding (MIG) and Gas Tungsten Arc Welding (TIG) equipment and setup.

Welding & Metal Fabrication Workforce Transition – This major will be used for all Individualized Cooperative Education (ICE) programs to build their training outline. Students will focus on employability skills while receiving hands-on experience in the welding and metal fabrication industry. Included is a work-site experience (WSE) where students develop proficiency skills unique to a given occupation along with a formal mentoring program designed to accelerate an individual student’s skill development.

Metal Fabricator – This major prepares students as metal fabricators who fabricate and assemble structural metal products, such as framework for machinery and metal parts for buildings and bridges as specified on work orders and drawings. Instruction includes metal fabrication and press brake operations, print reading, and welding codes with specialized instruction in Shielded Metal Arc Welding (stick), Gas Metal Arc Welding (MIG), and Gas Tungsten Arc Welding (TIG) techniques. Students experience hands-on lab applications with metal fabrication assignments/projects and work-site experience (WSE).

Press Brake Operator – This major prepares students as press brake operators who set up and/or operate power-press or power-brake machines to process plate and sheet metal as specified on work orders and drawings. Instruction includes fundamentals of cutting processes, metal fabrication, and computer-aided drafting and design along with metal preparation and heat treatments, print reading, and welding codes. Student’s focus on press brake set-up and operation and experience hands-on lab applications with die bending projects and work-site experience (WSE).

Robotic Welding Operational Technician – This major prepares students as robotic welding operational technicians who provide both technical assistance and maintenance of robotic systems and equipment. Students learn fundamentals of welding and safety procedures with an

emphasis in robotic welding components, operation and programming. Included are blueprints and detailed drawings, welding codes and specifications, hands-on applications with a focus on control panels and operating stations, and work-site experience (WSE).

Robotic Welding Operator – This major prepares students as robotic welding operators who set up and operate robotic welding equipment. Students learn fundamentals of welding and safety procedures with an emphasis in robotic welding components and operation. Included are blueprints and detailed drawings, welding codes and specifications, hands-on applications with a focus on control panels and operating stations, and work-site experience (WSE).

Plasma/Flame Burn Table Operator – This major prepares students as operators of burn tables and plasma tables who work in the construction or auto manufacturing industry cutting and fabricating products such as huge beams, metal-sheet goods or chassis, and frames. Instruction includes fundamentals of cutting processes, metal fabrication, computer-aided drafting and design, and plasma/flame burn table operations along with metal preparation and heat treatments, and print reading. Student's focus on plasma/flame burn table specifications, set-up and operation and experience hands-on lab applications with metal fabrication assignments/ projects and work-site experience (WSE).