WELDING (WEL)

Courses

WEL 101A Welding Safety/OSHA 10 (1)
Through a variety of classroom and/or lab learning and assessment activities, students in this course will explain job/site safety and precautions for job/site hazards, determine the uses of personal protective equipment (PPE), identify the safety equipment and procedures related to safe work practices and environment, identify fire prevention and protection techniques, and explore Hazardous Communications (HazCom) including Material Safety Data Sheets (MSDS).

WEL 105 Welding Blueprint Reading (3)
This course focuses on reading, interpreting, and creating blueprints. Students will learn how to sketch out designs by hand and use them to create a print showing multiple views, measurement along with welding symbols, materials needed and their cost.

WEL 110A Print Reading/Math I (1)

WEL 120 Oxy-Fuel/Cutting Procedures (3)
This course will include cutting of ferrous and non-ferrous materials with manual, motor driven, and oxy-fuel shape cutting equipment. Also included are plasma-arc cutting (PAC) and carbon-arc cutting (CAC-A). Safety, equipment, and the basic fundamentals of cutting processes will be introduced. Student will be expected to produce acceptable oxy-fuel, PAC, and CAC-A cuts. This unit follows ANSI / AWS C4.2-90 an American National Standard.

WEL 131 Shielded Metal Arc Welding I (3)
Through classroom and/or lab/shop learning and assessment activities, students in this course will describe the shielded metal arc welding (SMAW) process, demonstrate the safe and correct set-up of the SMAW work station, associate SMAW electrode classifications with base metals and joint criteria, demonstrate proper electrode selection and use based on metal types and thicknesses, build pads of weld beads with selected electrodes in the flat position, build pads of weld beads with selected electrodes in the horizontal position, perform basic SMAW welds on selected weld joints, and perform visual inspection of welds.

WEL 131A SMAW (2)

WEL 135 Shielded Metal Arc Welding II (3)
This course is a continuation of SMAW. Additional positions, metals, and metal alloys will be introduced providing the student additional experience with Shielded Metal Arc Welding.

WEL 135A SMAW I (2)
This course is a continuation of SMAW. Additional positions, metals, and metal alloys will be introduced providing the student additional experience with Shielded Metal Arc Welding.

WEL 141 Gas Metal Arc Welding I (3)
Through classroom and/or lab/shop learning and assessment activities, students in this course will explain gas metal arc welding (GMAW) process, demonstrate the safe and correct set-up of the GMAW work station, correlate GMAW electrode classifications with base metals and joint criteria, demonstrate proper electrode selection and use based on metal types and thicknesses, building pads of weld beads with selected electrodes in the flat position, build pads of weld beads with selected electrodes in the horizontal position, produce basic GMAW welds on selected weld joints, and conduct visual inspection of GMAW welds.

WEL 141A GMAW (2)

WEL 145 Gas Metal Arc Welding II (3)
This course is a continuation of GMAW. Additional positions, metals, and metal alloys will be introduced providing the student additional experience with gas metal arc welding. Prerequisites: WEL 141 GMAW I

WEL 145A GMAW Welding (2)
The course is a continuation of GMAW. Additional positions and tests will be introduced providing the student additional experience with gas metal arc welding.

WEL 170 Welding Inspection & Qualifications (3)
This course focuses on understanding proper measurement tools and application along with using mathematics to determine exact locations of required additional items and penetrations associated to each Fabrication job. Using tape measure squares and other tools to layout reference lines and grids to meet specs and tolerances required.

WEL 180 Blueprint & Estimation (3)
This course focuses on reading, interpreting, and creating blueprints. Students will learn how to sketch out designs by hand and use them to create a print showing multiple views, measurement along with welding symbols, materials needed and their cost.

WEL 190 CNC Cutting & Brake Processes (3)
This course introduces Computer Numerical Control (CNC) and will be introduced to a CNC machine used in the precision cutting and bending applications. They will gain practical experience in the application of creating and using CNC programs, and machine setup and operation.

WEL 195 CAD Systems & Drafting (3)
This course introduces CAD software as a Layout and drafting tool. Instruction will be given in file handling, basic commands function, drafting techniques, programming, and plotting. Fabrication applications will be used in lab exercises to demonstrate CAD programs and commands. Work will be completed with CAD systems.

WEL 221 Flux Cored Arc Welding I (3)
The Flux Cored Arc Welding Unit (FCAW) is designed to teach the student the correct techniques to weld in flat and horizontal positions along with operational procedures. Practice and training in the welding shop will develop the basic skill level necessary to produce quality welds in flat and horizontal positions and different joint configurations.

WEL 227 Welding Metallurgy (3)
This course will enable the student to develop basic metallurgy skills with both ferrous and non-ferrous metals. The student will explore properties of metals, hardness testing, heat-treating, quenching, annealing, normalizing, tempering and surface hardening. Prerequisites: Completion of Certificate A courses

WEL 240 Gas Metal Arc Welding- Plate (3)
Course will follow requirements identified for SENSE Level II GMAW- Plate processes. Prerequisites: WEL 145 Gas Metal Arc Welding II

WEL 246 Gas Tungsten Arc Welding I (3)
Through classroom and/or lab/shop learning and assessment activities, students in this course will explain the gas tungsten arc welding (GTAW) process, demonstrate the safe and correct set-up of the GTAW work station, relate GTAW electrode and filler metal classifications with base metals and joint build pads of weld beads with selected electrodes and filler material in the flat position, build pads of weld beads with selected electrodes and filler material in the horizontal position, perform basic GTAW welds on selected weld joints, and perform visual inspection of GTAW welds. Prerequisites: WEL 131 Shielded Metal Arc Welding I

WEL 267 Gas Tungsten Arc Welding II (3)
This course is a continuation of WEL 246 GTAW I. Additional positions, metals, and metal alloys will be introduced providing the student additional experience with gas tungsten arc welding. Prerequisites: WEL 131 Shielded Metal Arc Welding I and WEL 246 Gas Metal Arc Welding I

WEL 270 Welding Fabrication (3)
This course focuses on identifying and using proper equipment and hand tools used for fixturing and fitting material along with fabricating materials to complete jobs. Students will learn how to use various clamps, guides, and squares along with other measuring tools and power tools from lay-out to completion.

WEL 280 Rigging Lifting & Handling (3)
This course focuses on determining the correct size and type of rigging equipment required to safely perform lifting operation. Proper Rigging Hardware Selections, Weight Calculations, and Handling procedures will be covered to show students how to properly transport and relocate heavy and uneven materials to perform layout task and complete jobs.

WEL 290 Fixturing Fit & Pre-Assembly (3)
This course focuses on fixturing materials into proper position along with securing materials to reduce warpage to meet location tolerances and welding codes. Students will learn how to tack materials in locations required to be ready for inspection so they can be approved for completion.

WEL 295 Welding Layout (3)
This course teaches the fundamentals in layout and fabrication related to the welding industry. Major emphasis on structural shapes and use in construction. Prerequisites: Cert A Level I courses.