WELDING (WEL)

WEL 101 Welding Safety/OSHA 10 (2)
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 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 110 Print Reading/Math I (1)
This course is designed to teach a basic understanding of welder's math and the symbols used on blueprints. The symbols used on blueprints give the designer a way to relay information to the fitter and welder. The graphic language on blueprints uses various symbols, lines, and notes to convey information. A blueprint is used by a welder to visualize the parts final form, to position and align various members, and to determine the type of joint preparation. It tells the welder what type of filler metal to use, where the weld metal is to be placed, the extent of welding and the size, contour, and finish method for the welds.

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 150 Workplace Skills I (2)
This course teaches some of the skills needed to get a job in any field. This course utilizes Work Keys assessments which include Applied Math (basic word problem-solving), Reading for Information, and Locating Information. This course also introduces some of the testing methods used in the welding industry. Destructive and non-destructive testing methods will be discussed.

WEL 160 Oxy-Fuel Welding (4)
This course teaches basic welding using and oxy-fuel welding set-up. A student will learn how to set-up and torch and become proficient in the start-up and shut down procedures. Basic welding skill and understanding of the process is needed in this area. This will lead into gas tungsten arc welding (GTAW) at a later date.

WEL 170 Fabrication Measuring & Layout (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 210 Print Reading/Math II (2)
This course is designed to teach a basic understanding of blueprints. The symbols used on blueprints give the designer a way to relay information to the fitter and welder. The graphic language on blueprints uses various symbols, lines, and notes to convey information. A blueprint is used by a welder to visualize the parts final form, to position and align various members, and to determine the type of joint preparation. It tells the welder what type of filler metal to use, where the weld metal is to be placed, the extent of welding and the size, and the contour and finish method for the welds. Prerequisite: Print Reading/Math I.

WEL 220 FCAW Welding (5)
The Flux Cored Arc Welding Unit (FCAW) is designed to teach the student the correct techniques to weld in all positions. Safety is stressed in the shop. Practice and training in the welding shop will develop the basic skill level necessary to produce quality welds in all positions and in different joint configurations. Prerequisites: Welding Safety/OSHA 10; SMAW I ; GMAW.

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 222 FCAW I (2)
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 230 SMAW II (5)
The Shielded Metal Arc Welding II (SMAW) unit is designed to teach the student the correct techniques to weld in the vertical up and overhead position. Safety is stressed in the shop. Practice and training in the welding shop will develop the basic skill level necessary to produce quality welds in these positions using lap joints and tee joints.

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 242 GMAW - Aluminum (5)
The Gas Metal Arc Welding Aluminum (GMAW) unit is designed to teach the student the correct techniques to weld in all positions. Safety is stressed in the shop. Practice and training in the welding shop will develop the basic skill level necessary to produce quality welds in all positions and in different joint configurations. Prerequisites: Welding Safety/OSHA 10; GMAW.

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 250 Workplace Skills II (2)
Workplace skills include writing a resume and job search technique. This section is at the very end of the program and if a student is going directly into the work force then resumes should be sent to prospective employers. Any job searches and possible job interviews will take place during this section. This is also final preparation for the exit assessment by using Key Train software for Applied Math and Reading for Information.

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.