

Welding (WEL)

WEL 150 Oxy-Acetylene Fusion Welding I

1 Hour

Prerequisites: None
2 hours weekly (0-2)

A study of oxy-acetylene equipment; production of gases, storage and distribution, types of flames, operator protective equipment, and general safety precautions. Joints welded will be the butt-joint and outside corner joint in the flat position.

WEL 151 Oxy-Acetylene Fusion Welding II

2 Hours

Prerequisites: WEL 150
4 hours weekly (0-4)

A study of torch types, their construction and classification and specifications of gas welding rods. Joints welded will be the lap joint and horizontal tee joint. Also a study of the principles of joint design, their preparation, and control of expansion and contraction. Joints welded will be the butt and T joints in the vertical and overhead positions.

WEL 152 Brazing and Soldering

1 Hour

Prerequisites: WEL 151
2 hours weekly (0-2)

A study of filler materials, fluxes, joint preparation and techniques. Emphasis will be placed on flange joints, T joints, and butt joints in several positions.

WEL 153 Oxy-Acetylene Cutting

1 Hour

Prerequisites: None
2 hours weekly (0-2)

A study of flame-cutting principles and safety, operation setup of the oxy-acetylene cutting outfit, and flame-cutting in several directions, including beveling, piercing, and cutting to prescribed sizes.

WEL 154 Arc Welding I

2 Hours

Prerequisites: None
4 hours weekly (0-4)

A study of process and safe work habits, striking an arc, running beads of weld in several directions, and padding, all in the flat position. Also, a study of American Welding Society (AWS) weld symbols,

including the fillet weld symbol. Weaves, flat position, and three different patterns are taught.

WEL 155 Arc Welding II

2 Hours

Prerequisites: WEL 154
4 hours weekly (0-4)

A study of metal properties, basic joint designs, weld defects, and distortion control. Study will also include fillet welds in the flat position, lap joints, and single-and multiple-pass techniques. Also, a study of electrode classification systems, including selection, properties, use, and storage. The use of large diameter iron powder electrodes in various fillet weld configurations, including circumferential welds, will also be studied.

WEL 156 Arc Welding III

1 Hour

Prerequisites: WEL 155
2 hours weekly (0-2)

A study of the AWS weld symbol for groove welds and definition of flat position. There will be preparation and welding of vee-groove butt joints in the flat position with and without backing bar.

WEL 157 Arc Welding IV

1 Hour

Prerequisites: WEL 156
2 hours weekly (0-2)

A study of beads of weld and vee-groove butt joints with and without backing bar in the horizontal position. Definition of horizontal position will also be included.

WEL 158 Arc Welding V

1 Hour

Prerequisites: WEL 157
2 hours weekly (0-2)

A study of single beads, triangular weave, Christmas tree weave in the vertical-up position, and vee-groove butt joints, with and without a backing bar, in the vertical position. Definition of vertical position will also be included.

WEL 159 Arc Welding

1 Hour

Prerequisites: WEL 158
2 hours weekly (0-2)

A study of single beads, multiple pass fillet welds in the overhead position, and vee-groove butt joint with backing bar in overhead position. A definition of the overhead position will also be included.

WEL 160 M.I.G. Welding

2 Hours

Prerequisites: None
4 hours weekly (0-4)

A study of power sources, wire feeders, their maintenance and adjustment, and types of transfer, shielding gases, and flow meters. Emphasis will be placed on T joints in the horizontal and vertical down welding position and the butt joint in the flat and vertical down position. Also, the study of electrode wires, shielding gases, flow meters, and accessory equipment. Emphasis will be placed on the butt and T joint in the vertical P welding position and practice on the overhead T joint.

WEL 161 Cored Wire Welding

2 Hours

Prerequisites: None
4 hours weekly (0-4)

A study of electrode wires, welding machines, and their maintenance and adjustment. Emphasis will be placed on the T joint in the flat and horizontal welding positions and the butt joint in the flat position. Also, study of the techniques of out-of-position welding, with emphasis on the butt joints and fillet welds in the vertical and overhead welding positions.

WEL 162 T.I.G. Welding

1 Hour

Prerequisites: None
2 hours weekly (0-2)

A study of power sources, torch assemblies, electrode types, shielding gases, and types of current used on different metals. Emphasis will be placed on butt and T joints in the flat, horizontal, overhead, and vertical positions.

WEL 163 Weld Testing and Inspection

2 Hours

Prerequisites: None
4 hours weekly (0-4)

A study of the definition of welding qualifications, welding codes, and procedures and testing. Also included will be the AWS limited-thickness bend test in the flat, horizontal, and vertical position using E-7018, 5/32" diameter electrodes. Also, the study of procedure and operator qualifications and the interpretation of the test results. Emphasis will be placed on the preparation and testing of welded joints.

WEL 181 Introduction to Oxy-Acetylene Welding

1 Hour

Prerequisites: None
2 hours weekly (0-2)

A study of oxy-acetylene equipment, types of flames, general safety precautions, and flame-cutting principles. Joints welded will be the outside corner, lap and butt joints in the flat positions, and horizontal fillet. Also, brazing and soldering.

WEL 182 Introduction to Arc Welding

1 Hour

Prerequisites: None
2 hours weekly (0-2)

A study of process and work habits, striking the arc, running beads, padding, fillet welds in the horizontal position, and butt joints in the flat position.

WEL 183 Intermediate Arc Welding

1 Hour

Prerequisites: WEL 182
2 hours weekly (0-2)

A study of electrode classification, butt joints in the flat position with 100% penetration, fillet welds in the horizontal and vertical positions, and butt joints in the vertical position.

WEL 188 Welding Laboratory I

1 Hour

Prerequisites: None
2 hours weekly (0-2)

This course will consist of supervised laboratory assignments on vee-joint butt welds in vertical positions with the E-7018 electrode. All welds will be tested according to the American Welding

Society Code. The successful student will be able to pass the qualification test required by the coal mining and construction industries.

WEL 189 Welding Laboratory II

1 Hour

Prerequisites: WEL 188

2 hours weekly (0-2)

This course will consist of supervised laboratory assignments on T joint welds in the vertical position with the E-7018 electrode. All welds will be tested according to the American Welding Society Code. The successful student will be able to pass the qualification test required by the coal mining and construction industries.

WEL 190 Welding Laboratory III

1 Hour

Prerequisites: WEL 189

2 hours weekly (0-2)

This course will consist of supervised laboratory assignments on vee/butt joint welds in the overhead position with the E-7018 electrode. All welds will be tested according to the American Welding Society Code. The successful student will be able to pass the qualification test required by the coal mining and construction industries.

WEL 191 Welding Laboratory IV

1 Hour

Prerequisites: WEL 190

2 hours weekly (0-2)

This course will consist of supervised laboratory assignments on T butt joint welds in the overhead position with the E-7018 electrode. All welds will be tested according to the American Welding Society Code. The successful student will be able to pass the qualification test required by the coal mining and construction industries.

WEL 194 Pipe Welding

2 Hours

Prerequisites: WEL 193

4 hours weekly (0-4)

Pipe joints are prepared, welded, and tested in accordance with A.W.S.D1.1 Structural Welding Code. Butt joints are welded uphill and downhill in the 6G position with E-6010 and E-7018 electrodes.

WEL 196 M.I.G. Welding—Aluminum

1 Hour

Prerequisites: WEL 160

2 hours weekly (0-2)

This course will teach the student to use the pound gun to weld aluminum in all positions.

WEL 200 Welding Theory

2 Hours

Prerequisites: None

2 hours weekly (2-0)

This course will cover oxy-acetylene, AC, DC, inert gas, and automatic welding theory.

WEL 201 and 201 A&B Industrial Maintenance Welding Lab

IAI – MTM 936

3-6 Hours

Prerequisites: None

6-12 hours weekly (0-6-12)

This is a laboratory class that will develop cognitive and manipulative skills to use the SMAW, GMAW, GTAW, PAC, OFC, and DAW welding and cutting processes. Fillet and groove welds will be performed on carbon steels, stainless steel, and aluminum material in all welding positions.