Welding (WEL)

WEL 115 Metallurgy

2 Hours

Prerequisites: None

2 hours weekly (2-0)

A study of the fundamental characteristics and properties of metals and alloys, elementary theories of bonding, crystal structure, deformation phenomena, and phase relationships in binary alloys. Annealing and heat treatment of alloys with major emphasis on iron-carbon alloys.

WEL 120 OXYFUEL WELDING, CUTTING, AND BRAZING

3 Hours

Prerequisites: None

5 Hours Weekly (1-4)

This course is a study of the theory and operation of oxy-acetylene welding and cutting, brazing, and plasma cutting. Students learn to produce welds and braze joints in the flat, horizontal, vertical, and overhead positions in accordance with American Weld Society (AWS) standards used in industry and construction. Introduces cutting methods of beveling, piercing, and cutting to prescribed sizes.

WEL 121 SMAW (STICK) PLATE WELDING I

3 Hours

Prerequisites: None

5 Hours Weekly (1-4)

This course is a study of Shielded Metal Arc Welding (SMAW) theory and practice in preparation and welding of flat and horizontal position steel plate joints. Students learn to produce stringer beads, weaves, fillet, and groove welds in the flat and horizontal positions. Safety, electrode selection, American Welding Society (AWS) weld symbols, equipment setup and operation, inspection and testing are included.

WEL 122 GMAW (MIG) PLATE WELDING

3 Hours

Prerequisites: None

5 Hours Weekly (1-4)

This course is a study of Gas Metal Arc Welding (GMAW) theory and practice in the preparation and welding of mild steel, aluminum, and stainless steel in all positions. Safety, equipment components, nozzle setup, torch angles, travel direction, weave motion, bead sequence, and out-of-position welding are emphasized. Setup and operation of the GMAW welder with various conditions for mild steel. The student will use the pound gun to weld aluminum and stainless steel in all positions.

WEL 123 SMAW (STICK) PLATE WELDING II

3 Hours

Prerequisites: WEL 121

5 Hours Weekly (1-4)

This course is a study of Shielded Metal Arc Welding (SMAW) theory and practice in preparation and welding of vertical and overhead position steel plate joints. Students learn to produce stringer and weave beads with varying techniques. Safety, electrode selection, AWS weld symbols, equipment setup and operation, inspection and testing are included.

WEL 124 GTAW (TIG) WELDING I

3 Hours

Prerequisites: None

5 Hours Weekly (1-4)

This course is a study of Gas Tungsten Arc

Welding (GTAW) theory and practice in preparation and welding of mild steel plate in all positions. Safety, equipment components, torch set-up, travel direction, AWS weld symbols, shielding gases, torch and filler rod angles, weave and stringer techniques will be emphasized.

WEL 125 WELD TESTING AND INSPECTION

3 Hours

Prerequisites: WEL 121 and WEL 123(CONCURRENT)

4 Hours Weekly (2-2)

This course is the study of Shielded Metal Arc Welding (SMAW) theory and practice in the preparation and welding of mild steel plate for the American Welding Society (AWS) certification test in the flat, horizontal, vertical, and overhead position. Safety, joint preparation, AWS code and specifications, AWS inspection standards and evaluation. The successful student will be able to pass the qualification test required by the industry and construction.

WEL 126 SMAW (STICK) PLATE WELDING III

3 Hours

Prerequisites: WEL 121 and WEL 123

5 Hours Weekly (1-4)

This course is a study of the theory and practice in preparation and welding of vertical and overhead position steel plate joints with the SMAW process using large diameter electrodes. Safety, electrode selection, American Welding Society (AWS) weld symbols, equipment setup and operation, inspection and testing are included. The successful student will be able to pass the qualification test required by the industry and construction.

WEL 127 WELDING AND METAL FABRICATION

3 Hours

Prerequisites: WEL 121 or WEL 122 or WEL 124

5 Hours Weekly (1-4)

This course is a study of welding and metal fabrication practices used in industry and construction. Hands-on lab exercises include assembly of assigned projects using safety, part and piece layout, fit-up, weld sequencing, and blueprints.

WEL 128 PIPE WELDING

3 Hours

Prerequisites: WEL 121, WEL 123 (Concurrent)

4 Hours Weekly (2-2)

This course is a study of pipe joint preparation and welding in accordance with American Welding Society (AWS) and American Society of Mechanical Engineers (ASME) standards used in industry and construction. Define, describe, and identify various pipe welding codes and procedures. Pipe joints are prepared, welded, and tested in accordance with AWS D.1.1 code.

WEL 129 GTAW (TIG) WELDING II

3 Hours

Prerequisites: Concurrent enrollment with WEL124

5 Hours Weekly (1-4)

This course is a study of Gas Tungsten Arc Welding (GTAW) theory and practice in preparation and welding of aluminum and stainless steel in all positions. Safety, equipment components, torch set-up, travel direction, AWS weld symbols, shielding gases, torch and filler rod angles, weave and stringer techniques will be emphasized.

WEL 130 GMAW (MIG) PLATE WELDING II

3 Hours

Prerequisites: WEL 122

5 Hours Weekly (1-4)

This course offers an in-depth study of advanced Gas Metal ARC Welding (GMAW) techniques, focusing on plate tests. Students will apply and expand upon their foundational skills, with an emphasis on welding mild steel in all positions. The course includes hands-on experience in setting up and operating both GMAW and Flux-Cored Arc Welding (FCAW) equipment under various conditions. A significant focus is placed on preparing students to successfully pass the AWS D1.1 Plate Test, ensuring they meet industry standards for quality and proficiency.