

# WELDING (442)

Information provided includes course descriptions by subject only. For complete 2024-2025 programs/academic plans, please refer to Academic Programs (<http://catalog.blackhawk.edu/academics/>).

## 442-100 Pipe Welding - Prep

**Credits:** 0.5-1

This course covers various ways to cut and bevel pipe as well as proper cleaning, fitment and tacking techniques on various size and thicknesses of pipe.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-336 or 442-152 or 442-160 or 442-165)

Complete Course Listing

## 442-101 Pipe Welding - Shielded Metal Arc Welding 1

**Credits:** 0.5-1

This class covers SMAW welding of 6" schedule 80 steel pipe. This will include welding open roots with E6010 and fill and cover passes using E7018 in a 1G position.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-100 and 442-336)

Complete Course Listing

## 442-102 Pipe Welding - Shielded Metal Arc Welding 2

**Credits:** 0.5-1

This class covers SMAW welding of 6" schedule 80 steel pipe. This will include welding open roots with E6010 and fill and cover passes using E7018 in a 5G position.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-101)

Complete Course Listing

## 442-104 Pipe Welding - Shielded Metal Arc Welding 4

**Credits:** 0.5-1

This class covers SMAW welding of 6" schedule 80 steel pipe. This will include welding open roots with E6010 and fill and cover passes using E7018 in a 6G position.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-103)

Complete Course Listing

## 442-105 Pipe Welding - Gas Tungsten Arc Welding 1

**Credits:** 0.5-1

This class covers GTAW welding of 6" schedule 40 steel pipe. This will include welding open roots, fill and cover passes using the cup walking technique in a 1G position.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-100 and 442-165)

Complete Course Listing

## 442-106 Pipe Welding - Gas Tungsten Arc Welding 2

**Credits:** 0.5-1

This class covers GTAW welding of 6" schedule 40 steel pipe. This will include welding open roots, fill and cover passes using the cup walking technique in a 5G position.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-105)

Complete Course Listing

## 442-107 Pipe Welding - Gas Tungsten Arc Welding 3

**Credits:** 0.5-1

This class covers GTAW welding of 6" schedule 40 steel pipe. This will include welding open roots, fill and cover passes using the cup walking technique in a 2G position.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (442-106)

Complete Course Listing

## 442-108 Pipe Welding - Gas Tungsten Arc Welding 4

**Credits:** 0.5-1

This class covers GTAW welding of 6" schedule 40 steel pipe. This will include welding open roots, fill and cover passes using the cup walking technique in a 2G position.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-107)

Complete Course Listing

## 442-109 Mechanics of Learning for Welding

**Credits:** 0.5-1

This course provides learners with strategies to develop study skills for success in college and the Welding Program. Through hands-on experience, learners apply study skills, learn how to think critically, and use information resources and technology. Focus will be on the use of college resources, goal setting, time management, flexible learning success strategies, and BTC Welding Program processes and procedures. Students will complete this course prior to starting other program welding courses.

**Aid Code:** 10 - undefined.

Complete Course Listing

## 442-110 Gas Metal Arc Welding – Pulsed Spray 1

**Credits:** 0.05-1

This course examines machine settings, theory, filler metals, polarities, safety protocol and welding processes for GMAW using a pulsed spray mode of transfer. Students will make groove and fillet welds in a flat position on different thicknesses of steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-318 or 442-142)

Complete Course Listing

#### **442-111 Gas Metal Arc Welding – Pulsed Spray 2**

**Credits:** 0.05-1

This course examines machine settings, theory, filler metals, polarities, safety protocol and welding processes for GMAW using a pulsed spray mode of transfer. Students will make groove and fillet welds in a horizontal position on different thicknesses of steel.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (442-110)

Complete Course Listing

#### **442-112 Gas Metal Arc Welding – Pulsed Spray 3**

**Credits:** 0.05-1

This course examines machine settings, theory, filler metals, polarities, safety protocol and welding processes for GMAW using a pulsed spray mode of transfer. Students will make groove and fillet welds in a vertical position on different thicknesses of steel.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (442-111)

Complete Course Listing

#### **442-116 Welding Metal Fabrication**

**Credits:** 0.5-1

This course is designed to provide students with the knowledge and skills required to fabricate simple projects or parts of a project found on engineering drawings. The use and care of fabricating tools, along with safety, is stressed.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-343 and 421-310 and 620-146 and 457-100 and 442-139 and 442-336 or 442-152 or 442-160 or 442-165)

Complete Course Listing

#### **442-117 Welding Metal Fabrication 2**

**Credits:** 0.5-1

This course is designed to teach proper layout, fitment and tacking of complex projects found on engineering drawings. Students will assemble advanced weldments and use welding skills learned in previous welding classes to build those weldments in position and within tolerances listed on the drawing.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (442-116)

Complete Course Listing

#### **442-118 GTAW Stainless Steel 1**

**Credits:** 0.05-1

This course covers Gas Tungsten Arc Welding equipment and welding procedures for producing fillet welds on stainless steel plates in the flat and horizontal positions. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.

Complete Course Listing

#### **442-119 GTAW Stainless Steel 2**

**Credits:** 0.05-1

This course covers Gas Tungsten Arc Welding (GTAW) equipment and welding procedures for producing fillet welds in the vertical position on stainless steel plates and in all positions on structural shapes fitted to plate. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.

Complete Course Listing

#### **442-120 GTAW Stainless Steel 3**

**Credits:** 0.05-1

This course covers Gas Tungsten Arc Welding (GTAW) equipment and welding procedures for producing fillet welds in the overhead position on stainless steel plates and structural shapes fitted to plate. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.

Complete Course Listing

#### **442-121 GTAW Stainless Steel 4**

**Credits:** 0.05-1

This course covers Gas Tungsten Arc Welding (GTAW) equipment and welding procedures for producing groove welds in the flat and horizontal positions on stainless steel plates and structural shapes. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.

Complete Course Listing

#### **442-122 GTAW Stainless Steel 5**

**Credits:** 0.05-1

This course covers Gas Tungsten Arc Welding (GTAW) equipment and welding procedures for producing groove welds in the vertical and overhead positions on stainless steel plates and in all positions on structural shapes. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.

Complete Course Listing

#### **442-123 GTAW Stainless Steel 6**

**Credits:** 0.05-1

This course uses skills developed in previous Gas Tungsten Arc Welding courses to produce a weldment from stainless steel following procedures and prints.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-124 GTAW Pipe Welding 1 – Stainless Steel****Credits:** 0.05-1

This course covers equipment, consumables and machine settings needed to produce welds in Schedule 40 stainless steel pipe. Students will learn to produce groove welds on schedule 40 stainless steel pipe in the 1G position using GTAW.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-125 GTAW Pipe Welding 2 – Stainless Steel****Credits:** 0.05-1

This course will teach students to produce groove welds on schedule 40 stainless steel pipe in the 2G position using GTAW.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-126 GTAW Pipe Welding 3 – Stainless Steel****Credits:** 0.05-1

This course will teach students to produce groove welds on schedule 40 stainless steel pipe in the 5G position using GTAW.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-127 GTAW Pipe Welding 4 – Stainless Steel****Credits:** 0.05-1

This course will teach students to produce groove welds on schedule 40 stainless steel pipe in the 6G position using GTAW.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-128 GTAW Stainless Sanitary Tube Welding 1****Credits:** 0.05-1

This course covers equipment, consumables and machine settings needed to produce welds in stainless steel sanitary tubing. Students will learn to produce groove welds on .065" wall stainless steel tubing with no filler metal in the 1G position using GTAW.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-129 GTAW Stainless Sanitary Tube Welding 2****Credits:** 0.05-1

This course will teach students to produce groove welds on .065" wall stainless steel tubing with no filler metal in the 2G position using GTAW.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-130 GTAW Stainless Sanitary Tube Welding 3****Credits:** 0.05-1

This course will teach students to produce groove welds on .065" wall stainless steel tubing with no filler metal in the 5G position using GTAW.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-131 GTAW Stainless Sanitary Tube Welding 4****Credits:** 0.05-1

This course will teach students to produce groove welds on .065" wall stainless steel tubing with no filler metal in the 6G position using GTAW.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-132 GMAW Stainless Steel 1****Credits:** 0.5-1

This course covers Gas Metal Arc Welding (GMAW) equipment and welding procedures for producing fillet welds on stainless steel plates in the flat and horizontal positions. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.**Co-requisites:** (442-156)

Complete Course Listing

**442-133 GMAW Stainless Steel 2****Credits:** 0.05-1

This course covers Gas Metal Arc Welding (GMAW) equipment and welding procedures for producing fillet welds in the vertical position on stainless steel plates and in all positions on structural shapes fitted to plate. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-134 GMAW Stainless Steel 3****Credits:** 0.05-1

This course covers Gas Metal Arc Welding (GMAW) equipment and welding procedures for producing fillet welds in the overhead position on stainless steel plates and structural shapes fitted to plate. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-135 GMAW Stainless Steel 4****Credits:** 0.05-1

This course covers Gas Metal Arc Welding (GMAW) equipment and welding procedures for producing groove welds in the flat and horizontal positions on stainless steel plates and structural shapes. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.

Complete Course Listing

#### **442-136 GMAW Stainless Steel 5**

**Credits:** 0.05-1

This course covers Gas Metal Arc Welding (GMAW) equipment and welding procedures for producing groove welds in the vertical and overhead positions on stainless steel plates and in all positions on structural shapes. Students will also clean and polish their completed weldments.

**Aid Code:** 10 - undefined.

Complete Course Listing

#### **442-137 GMAW Stainless Steel 6**

**Credits:** 0.05-1

This course uses skills developed in previous Gas Metal Arc Welding courses to produce a weldment from stainless steel following procedures and prints.

**Aid Code:** 10 - undefined.

Complete Course Listing

#### **442-139 Metal Finishing-General Fabrication**

**Credits:** 0.5-1

This course covers metal finishing that occurs after welding. Students will learn to identify grades of finishes as well as the proper equipment needed to achieve those finishes. Students will learn to finish welds mechanically with hand held power tools.

**Aid Code:** 10 - undefined.

**Co-requisites:** 449-300 or 620-164 or 449-425 or 442-317 or 442-141

Complete Course Listing

#### **442-141 Welding Shop Safety**

**Credits:** 0.5-1

This course will familiarize students with all necessary national safety rules and regulations of the welding industry, in addition to personal protective equipment and machine operation.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-109)

Complete Course Listing

#### **442-142 Introduction to Welding**

**Credits:** 0.5-1

The introduction to welding course will introduce students to the history of welding, basic metallurgy, weld defects and discontinuities, codes and standards and common welding processes and practices.

**Aid Code:** 10 - undefined.

**Co-requisites:** (620-165 or 442-141 or 442-317 or 449-425)

Complete Course Listing

#### **442-143 Shielded Metal Arc Welding 1**

**Credits:** 0.5-1

This course examines the theory and operation of Shielded Metal Arc Welding (SMAW). Safety protocols are reviewed and practiced. Proper machine settings and common filler metals are used to produce flat position welds on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-318 or 442-142)

Complete Course Listing

#### **442-144 Shielded Metal Arc Welding 2**

**Credits:** 0.5-1

This course examines the theory and operation of Shielded Metal Arc Welding (SMAW). Safety protocols are reviewed and practiced. Proper machine settings and common filler metals are used to produce horizontal position welds on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-336 or 442-143)

Complete Course Listing

#### **442-145 Shielded Metal Arc Welding 3**

**Credits:** 0.5-1

This course examines the theory and operation of Shielded Metal Arc Welding (SMAW). Safety protocols are reviewed and practiced. Proper machine settings and common filler metals are used to produce vertical position welds on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-337 or 442-144)

Complete Course Listing

#### **442-146 Shielded Metal Arc Welding 4**

**Credits:** 0.5-1

This course examines the theory and operation of Shielded Metal Arc Welding (SMAW). Safety protocols are reviewed and practiced. Proper machine settings and common filler metals are used to produce overhead position welds on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-338 or 442-145)

Complete Course Listing

#### **442-147 Shielded Metal Arc Welding 5**

**Credits:** 0.5-1

This course applies the theory and operation of Shielded Metal Arc Welding (SMAW) learned in prior courses through completion of projects. Safety protocols are reviewed and practiced.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-339 or 442-146)

Complete Course Listing

**442-148 Flux Cored Arc Welding 1****Credits:** 0.5-1

This course examines the theory and practical operation of Flux Cored Arc Welding (FCAW). Safety protocols are reviewed and practiced. Proper machine settings and filler metals are used to produce flat position welds on carbon steel using Gas Shielded and Self Shielded FCAW.

**Aid Code:** 10 - undefined.**Co-requisites:** (449-300 or 620-164 or 449-425 or 442-317 or 442-141) and (442-318 or 442-142) and 442-109

Complete Course Listing

**442-149 Flux Cored Arc Welding 2****Credits:** 0.5-1

This course examines the theory and practical operation of Flux Cored Arc Welding (FCAW). Safety protocols are reviewed and practiced. Proper machine settings and filler metals are used to produce horizontal position welds on carbon steel using Gas Shielded and Self Shielded FCAW.

**Aid Code:** 10 - undefined.**Co-requisites:** 449-300 and 442-109 and 442-142

Complete Course Listing

**442-150 Flux Cored Arc Welding 3****Credits:** 0.5-1

This course examines the theory and practical operation of Flux Cored Arc Welding (FCAW). Safety protocols are reviewed and practiced. Proper machine settings and filler metals are used to produce vertical position welds on carbon steel using Gas Shielded and Self Shielded FCAW.

**Aid Code:** 10 - undefined.**Co-requisites:** 449-300 or 620-164 or 449-425 or 442-317 or 442-141 and 442-109 and 442-142

Complete Course Listing

**442-151 Flux Cored Arc Welding 4****Credits:** 0.5-1

This course examines the theory and practical operation of Flux Cored Arc Welding (FCAW). Safety protocols are reviewed and practiced. Proper machine settings and filler metals are used to produce overhead position welds on carbon steel using Gas Shielded and Self Shielded FCAW.

**Aid Code:** 10 - undefined.**Co-requisites:** (442-333 or 442-150)

Complete Course Listing

**442-152 Flux Cored Arc Welding 5****Credits:** 0.5-1

This course applies the theory and operation of Flux Cored Arc Welding (FCAW) learned in prior courses through completion of projects. Safety protocols are reviewed and practiced.

**Aid Code:** 10 - undefined.**Co-requisites:** (442-334 or 442-151)

Complete Course Listing

**442-153 Welding Blueprint Reading 1****Credits:** 0.5-1

This course covers blueprint reading specific to the welding industry. Students examine and define welding symbols and abbreviations used on welding specific blueprints.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-154 Thermal Cutting****Credits:** 0.5-1

Students will perform oxy-fuel cutting set up and operations, line burner operation, plasma cutting operations, carbon arc cutting and gouging and coupon preparations used for practice and testing.

**Aid Code:** 10 - undefined.**Co-requisites:** (442-318 or 442-142)

Complete Course Listing

**442-155 Gas Metal Arc Welding 1****Credits:** 0.5-1

This course examines Gas Metal Arc Welding (GMAW) machine settings, theory, filler metals, polarities, safety protocol and welding process.

Students will make welds in the flat position on carbon steel.

**Aid Code:** 10 - undefined.**Co-requisites:** (442-318 or 442-142) and 442-109 and (449-300 or 620-164 or 449-425 or 442-317 or 442-141)

Complete Course Listing

**442-156 Gas Metal Arc Welding 2****Credits:** 0.5-1

This course examines Gas Metal Arc Welding (GMAW) machine settings, theory, filler metals, polarities, safety protocol and welding process.

Students will make welds in the horizontal position on carbon steel.

**Aid Code:** 10 - undefined.**Co-requisites:** 449-300 or 620-164 or 449-425 or 442-317 or 442-141 and 442-109 and 442-142

Complete Course Listing

**442-157 Gas Metal Arc Welding 3****Credits:** 0.5-1

This course examines Gas Metal Arc Welding (GMAW) machine settings, theory, filler metals, polarities, safety protocol and welding process.

Students will make welds in the vertical position on carbon steel.

**Aid Code:** 10 - undefined.**Co-requisites:** 449-300 or 620-164 or 449-425 or 442-317 or 442-141 and 442-109 and 442-142

Complete Course Listing

#### 442-158 Gas Metal Arc Welding 4

Credits: 0.5-1

This course examines Gas Metal Arc Welding (GMAW) machine settings, theory, filler metals, polarities, safety protocol and welding process. Students will make welds in the overhead position on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-322 or 442-157)

Complete Course Listing

#### 442-159 Gas Metal Arc Welding 5

Credits: 0.5-1

This course examines Pulsed Gas Metal Arc Welding (GMAW-P) machine settings, theory, filler metals, safety protocol and welding process. Students will make welds in the flat position on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-323 or 442-111 or 442-158)

Complete Course Listing

#### 442-160 Gas Metal Arc Welding 6

Credits: 0.5-1

This course examines Pulsed Gas Metal Arc Welding (GMAW-P) machine settings, theory, filler metals, safety protocol and welding process. Students will make welds in the horizontal and vertical positions on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-324 or 442-113 or 442-159)

Complete Course Listing

#### 442-161 Gas Tungsten Arc Welding 1

Credits: 0.5-1

This course covers Gas Tungsten Arc Welding (GTAW) machine settings, theory, filler metals, polarities, safety protocol and welding process. Students will make flat position welds on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** (449-300 or 620-164 or 449-425 or 442-317 or 442-141) and (442-318 or 442-142) and (442-109)

Complete Course Listing

#### 442-162 Gas Tungsten Arc Welding 2

Credits: 0.5-1

This course covers Gas Tungsten Arc Welding (GTAW) machine settings, theory, filler metals, polarities, safety protocol and welding process. Students will make horizontal position welds on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** 449-300 or 620-164 or 449-425 or 442-317 or 442-141 and 442-109 and 442-142

Complete Course Listing

#### 442-163 Gas Tungsten Arc Welding 3

Credits: 0.5-1

This course covers Gas Tungsten Arc Welding (GTAW) machine settings, theory, filler metals, polarities, safety protocol and welding process. Students will make vertical position welds on carbon steel.

**Aid Code:** 10 - undefined.

**Co-requisites:** 449-300 or 620-164 or 449-425 or 442-317 or 442-141 and 442-109 and 442-142

Complete Course Listing

#### 442-164 Gas Tungsten Arc Welding 4

Credits: 0.5-1

This course covers Gas Tungsten Arc Welding (GTAW) machine settings, theory, filler metals, polarities, safety protocol and welding process. Students will make flat and horizontal position welds on aluminum.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-328 or 442-163)

Complete Course Listing

#### 442-165 Gas Tungsten Arc Welding 5

Credits: 0.5-1

This course covers Gas Tungsten Arc Welding (GTAW) machine settings, theory, filler metals, polarities, safety protocol and welding process. Students will make vertical position welds on aluminum.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-329 or 442-164)

Complete Course Listing

#### 442-166 Welding Certification

Credits: 0.5-1

This course covers destructive and non-destructive testing methods and welding procedure creation and implementation as it relates to welding code work. Participants will write a procedure, fabricate, weld and test two pre-qualified specimens in accordance with a specified welding code.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-146) and (442-152) and (442-160) and (442-165)

Complete Course Listing

#### 442-167 Advanced Welding Techniques

Credits: 0.5-1

Students construct various welding projects in accordance with the American Welding Society (AWS) SENCE program and EG2.0.

**Aid Code:** 10 - undefined.

**Co-requisites:** (442-166)

Complete Course Listing

**442-168 Welding Blueprint Reading 2****Credits:** 0.5-1

This course covers the fundamentals of Blueprint reading. Students examine and analyze types of drawings, orthographic projection, library of lines, title block dimensions and produce sketching projects.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-169 FCAW-G and GMAW-S Welding****Credits:** 0.05-1

This course examines Gas Metal Arc Welding Short Circuit Transfer and Flux Cored Arc Welding with Gas Shielding machine settings, theory, filler metals, polarities, safety protocol and welding processes. Students will make welds in the flat position on carbon steel.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-170 Pipe Welding – GMAW-S and FCAW-G****Credits:** 0.5-1

This class covers welding of 6" schedule 80 steel pipe with GMAW-S root passes and FCAW-G fill and cover passes in the 1 G position.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-171 Pipe Welding - GTAW and SMAW****Credits:** 0.05-1

This class covers GTAW and SMAW welding of 2" and 6" steel pipe. This will include welding open roots, fill and cover passes in various positions.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-172 Welding Codes****Credits:** 0.5-1

Students will learn the skills necessary to understand and navigate commonly used Welding Codes and Standards.

**Aid Code:** 10 - undefined.

Complete Course Listing

**442-173 Weld Inspection and Testing****Credits:** 0.5-1

Students who complete this course will be able to inspect and measure welds and discontinuities to determine compliance to a Welding Code or Standard.

**Aid Code:** 10 - undefined.**Co-requisites:** (442-172)

Complete Course Listing

**442-174 Resistance Welding****Credits:** 0.5-1

This course provides learners with the basic skills necessary to operate resistance welding equipment.

**Aid Code:** 10 - undefined.**Co-requisites:** 449-300 or 620-164 or 449-425 or 442-317 or 442-141

Complete Course Listing

**442-175 Robotic GMAW****Credits:** 0.5-1

This course builds on previously learned robotic set-up and programming skills to provide students with a foundation for robotic welding applications.

**Aid Code:** 10 - undefined.**Co-requisites:** (620-127) and (442-155)

Complete Course Listing

**442-176 Robotic GMAW 2****Credits:** 0.5-1

Students will learn how to develop and evaluate a program and process to robotically weld a given part.

**Aid Code:** 10 - undefined.**Co-requisites:** (457-101) and (442-173) and (442-132) and (442-177)

Complete Course Listing

**442-177 GMAW Aluminum 1****Credits:** 0.5-1

This course covers GMAW equipment, consumables and basic machine settings in addition to producing fillet welds on aluminum in the flat and horizontal positions using GMAW (MIG).

**Aid Code:** 10 - undefined.**Co-requisites:** (442-156)

Complete Course Listing

**442-317 Welding Shop Safety****Credits:** 0.5-1

This course will familiarize students with all necessary national safety rules and regulations of the welding industry, in addition to personal protective equipment and machine operation.

**Aid Code:** 31 - undefined.**Co-requisites:** (442-109)

Complete Course Listing

**442-318 Introduction to Welding****Credits:** 0.5-1

The introduction to welding course will introduce students to the history of welding, basic metallurgy, weld defects and discontinuities, codes and standards and common welding processes and practices.

**Aid Code:** 31 - undefined.**Co-requisites:** (449-300 or 620-164 or 449-425 or 442-317 or 442-141 or 412-450)

Complete Course Listing

#### **442-332 Flux Cored Arc Welding 2**

**Credits:** 0.5-1

This course examines the theory and practical operation of Flux Cored Arc Welding (FCAW). Safety protocols are reviewed and practiced. Proper machine settings and filler metals are used to produce horizontal position welds on carbon steel using Gas Shielded and Self Shielded FCAW.

**Aid Code:** 31 - undefined.

**Co-requisites:** (442-331)

Complete Course Listing

#### **442-336 Shielded Metal Arc Welding 1**

**Credits:** 0.5-1

This course examines the theory and operation of Shielded Metal Arc Welding (SMAW). Safety protocols are reviewed and practiced. Proper machine settings and common filler metals are used to produce flat position welds on carbon steel.

**Aid Code:** 31 - undefined.

**Co-requisites:** (442-109) and (449-300 or 620-164 or 449-425 or 442-317 or 442-141) and (442-318 or 442-142)

Complete Course Listing

#### **442-337 Shielded Metal Arc Welding 2**

**Credits:** 0.5-1

This course examines the theory and operation of Shielded Metal Arc Welding (SMAW). Safety protocols are reviewed and practiced. Proper machine settings and common filler metals are used to produce horizontal position welds on carbon steel.

**Aid Code:** 31 - undefined.

**Co-requisites:** (442-336 or 442-143) and 442-109 and 442-318 and (449-300 or 620-164 or 449-425 or 442-317 or 442-141)

Complete Course Listing

#### **442-338 Shielded Metal Arc Welding 3**

**Credits:** 0.5-1

This course examines the theory and operation of Shielded Metal Arc Welding (SMAW). Safety protocols are reviewed and practiced. Proper machine settings and common filler metals are used to produce vertical position welds on carbon steel.

**Aid Code:** 31 - undefined.

**Co-requisites:** (449-300 or 620-164 or 449-425 or 442-317 or 442-141) and 442-109 and 442-142 and (442-337 or 442-144)

Complete Course Listing

#### **442-339 Shielded Metal Arc Welding 4**

**Credits:** 0.5-1

This course examines the theory and operation of Shielded Metal Arc Welding (SMAW). Safety protocols are reviewed and practiced. Proper machine settings and common filler metals are used to produce overhead position welds on carbon steel.

**Aid Code:** 31 - undefined.

**Co-requisites:** (442-338 or 442-145)

Complete Course Listing

#### **442-340 Shielded Metal Arc Welding 5**

**Credits:** 0.5-1

This course applies the theory and operation of Shielded Metal Arc Welding (SMAW) learned in prior courses through completion of projects. Safety protocols are reviewed and practiced.

**Aid Code:** 31 - undefined.

**Co-requisites:** (442-339 or 442-146)

Complete Course Listing

#### **442-341 Welding Certification**

**Credits:** 0.05-1

This course covers destructive and non-destructive testing methods and welding procedure creation and implementation as it relates to welding code work. Participants will write a procedure, fabricate, weld and test two pre-qualified specimens in accordance with a specified welding code.

**Aid Code:** 31 - undefined.

**Co-requisites:** (442-340) and (442-152) and (442-160) and (442-336) and (442-165)

Complete Course Listing

#### **442-342 Advanced Welding Techniques**

**Credits:** 0.5-1

Students construct various welding projects in accordance with the American Welding Society (AWS) SENCE program and EG2.0.

**Aid Code:** 31 - undefined.

**Co-requisites:** (442-341)

Complete Course Listing

#### **442-343 Welding Blueprint Reading 1**

**Credits:** 0.5-1

This course covers the fundamentals of Blueprint reading. Students examine and analyze types of drawings, orthographic projection, library of lines, title block dimensions and produce sketching projects.

**Aid Code:** 31 - undefined.

Complete Course Listing

#### **442-412 Welding Open**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

Complete Course Listing

#### **442-417 Welding-Open**

**Credits:** 2.5

Update your skills with individualized instruction in the principles of Welding Techniques and process related to various materials. Welding safety is emphasized. Please note that this course requires the student to sign the ACKNOWLEDGEMENT OF RISK/ACCEPTANCE OF RESPONSIBILITY AGREEMENT AND RELEASE form prior to engaging in course activities.

**Aid Code:** 47 - undefined.

Complete Course Listing



**442-421 Garage and Repair Welding-12****Credits:** 1.2

This course is designed for students with basic welding knowledge and who may have basic welding equipment at home but have questions on how to use it for projects throughout their workshop/garage and home.

**Aid Code:** 47 - undefined.

Complete Course Listing

**442-422 Intro to Welding-3****Credits:** .3

This course will allow students to explore welding by teaching them welding safety, and basic welds and techniques.

**Aid Code:** 47 - undefined.

Complete Course Listing

**442-510 Welding Plumbers****Credits:** 0.05-1**Aid Code:** 50 - undefined.

Complete Course Listing

**442-511 Print Reading, Math, Cutting & Inspection****Credits:** 1-2

The program configuration model for the Welder Fabricator apprenticeship related instruction provides xx semesters of coursework and the Transition-to-Trainer course in the last year. Courses listed here were developed by instructors and subject matter experts from industry. Each semester includes 72 hours of instruction (4 hours per week, or the equivalent, each term).

**Aid Code:** 50 - undefined.

Complete Course Listing

**442-513 Advanced Fabrication and Layout with Soldering and Brazing****Credits:** 1-2

The program configuration model for the Welder Fabricator apprenticeship related instruction provides xx semesters of coursework and the Transition-to-Trainer course in the last year. Courses listed here were developed by instructors and subject matter experts from industry. Each semester includes 72 hours of instruction (4 hours per week, or the equivalent, each term).

**Aid Code:** 50 - undefined.

Complete Course Listing

**442-515 Welding & Fabrication Troubleshooting****Credits:** 1-2

The program configuration model for the Welder Fabricator apprenticeship related instruction provides xx semesters of coursework and the Transition-to-Trainer course in the last year. Courses listed here were developed by instructors and subject matter experts from industry. Each semester includes 72 hours of instruction (4 hours per week, or the equivalent, each term).

**Aid Code:** 50 - undefined.

Complete Course Listing

**442-522 Layout & Fabrication Basics with SMAW and GMAW Welding****Credits:** 1-2

The program configuration model for the Welder Fabricator apprenticeship related instruction provides xx semesters of coursework and the Transition-to-Trainer course in the last year. Courses listed here were developed by instructors and subject matter experts from industry. Each semester includes 72 hours of instruction (4 hours per week, or the equivalent, each term).

**Aid Code:** 50 - undefined.

Complete Course Listing

**442-524 Metallurgy & FCAW and GTAW Welding****Credits:** 1-2

The program configuration model for the Welder Fabricator apprenticeship related instruction provides xx semesters of coursework and the Transition-to-Trainer course in the last year. Courses listed here were developed by instructors and subject matter experts from industry. Each semester includes 72 hours of instruction (4 hours per week, or the equivalent, each term).

**Aid Code:** 50 - undefined.

Complete Course Listing

**442-526 Introduction to Automation, CNC and Lean Manufacturing****Credits:** 1-2

The program configuration model for the Welder Fabricator apprenticeship related instruction provides xx semesters of coursework and the Transition-to-Trainer course in the last year. Courses listed here were developed by instructors and subject matter experts from industry. Each semester includes 72 hours of instruction (4 hours per week, or the equivalent, each term).

**Aid Code:** 50 - undefined.

Complete Course Listing

**442-600 Beginning Art Welding-6****Credits:** .6

This course will introduce students to basic welding techniques as they complete an instructor-designed art welding project.

**Aid Code:** 60 - undefined.

Complete Course Listing

**442-601 The World of Welding****Credits:** 1.8

This course will introduce students to the basic of welding, with an overview of four most common types of welding. At the end of the course students will create a project using what they have learned.

**Aid Code:** 60 - undefined.

Complete Course Listing

**442-602 Intermediate Art Welding-6**

**Credits:** .6

This course will introduce the students to more advanced welding techniques as they complete an instructor-designed art welding project.

**Aid Code:** 60 - undefined.

Complete Course Listing