Welding Technology
Program Guide

Name: **Click here to enter text.** Date: Click here to enter a date. Year of Relevant Catalog: **19.20**

Technical Education Courses

Fall Semester				Spring Semester			
Course Title		Status	Credits	Course Title		Status	Credits
ENV 102	Safety Orientation (OSHA-10)		1	WEL 115	Gas Metal Arc Welding I **(Pre-req: ENV 102, MAT 101, WEL 105, 106, 111, 112, & 150)**		3
MAT 101	Technical Math		3	WEL 116	Gas Tungsten Arc Welding I **(Pre-req: ENV 102, MAT 101, WEL 105, 106, 111, 112, 115, 150, 215 & 223)**		3
WEL 105	Welding Theory		3	WEL 120	Fabrication & Production **(Pre-req: ENV 102, MAT 101, WEL 105, 106, 111, 112 & 150)**		3
WEL 106	Cutting Process **(Pre-req: ENV 102, WEL 111. Core-req: WEL 112)**		3	WEL 215	Gas Metal Arc Welding II **(Pre-req: ENV 102, MAT 101, WEL 105, 106, 111, 112, 115 & 150)**		3
WEL 111	Shielded Metal Arc Welding I		3	WEL 216	Gas Tungsten Arc Welding II **(Pre-req: ENV 102, MAT 101, WEL 105, 106, 111, 112, 116 & 150)**		3
WEL 112	Shielded Metal Arc Welding II **(Pre-req: ENV 102, WEL 105 & 111. Core-req: WEL 106)**		3	WEL 223	Core Wire Welding **(Pre-req: MAT 101, WEL 105, 106, 111, 112, 115, 150 & 215)**		3
WEL 150	Welding Blueprint Reading **(Pre-req/Core-req: ENV 102, MAT 101, WEL 105, 111)**		3				
		Total Credits	**19**			**Total Credits**	**18**
						Total Technical Certificate Credits	**37**

All courses listed with a prerequisite required must be passed with a C or better before moving on to the next course.

PROGRAM OUTCOMES

- Demonstrate an understanding of the methods and problems of production and exchange.
- Identify quality welding design and workmanship.
- Demonstrate competency in the ability to select, care for, and use industrial products wisely.
- Demonstrate competency in basic welding fundamentals.
- Identify materials and processes commonly used in welding.
- Develop work habits and interpersonal skills necessary to be a productive employee.
- Demonstrate ability to use welding tools and machines.

GENERAL EDUCATION PROGRAM OUTCOMES

- Compose coherent written communication.
- Deliver coherent oral communication.
- Show proficiency in locating, analyzing, documenting, and ethically using information sources.
- Perform and interpret calculations.
- Develop logical problem-solving skills and/or critical thinking skills.
- Identify appropriate strategies for gathering, analyzing, and displaying data to draw conclusions from scientific data.
- Collaborate effectively, which cultivates a respect for human diversity.
- Demonstrate technology literacy appropriate to area of study.

Associate of Applied Science Degree

Requirements		Status	Credits
Technical Certificate			
Certificate, Welding Technology			37
Related Electives			
			12
General Education Courses			
Written Communications (3 credit hours)			
ENG 100	Technical Writing		3
ENG 101	English Composition I		3
ENG 102	English Composition II		3
Verbal Communications (3 credit hours)			
COM 102	Interpersonal Communication		3
COM 105	Public Speaking		3
Mathematics (3 credit hours)			
MAT 101	Technical Math		3
MAT 105	Intermediate Algebra		3
MAT 150	College Algebra		3
Computer Science (3 credit hours)			
CSA 105	Introduction to Computer Applications and Concepts		3
CSA 110	Introduction to Computer Programming		3
Social Sciences, and/or Humanities and Fine Arts (3 credit hours)			
HUM 101	Ethics in the Workplace		3
PSY 101	General Psychology		3
		Technical Certificate	**37**
		Related Electives	**9**
		General Education	**15**
		Total AAS Credits	**61**

_____ _____

Student Signature Advisor

The physical demands described here are representative of those that must be met by a student to successfully perform the essential functions of working in this field. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.
While performing the duties of this program, the student is regularly required to stand, walk, and talk or hear. The student frequently is required to sit and use hands to handle or feel. The student is occasionally required to reach with hands and arms; climb or balance; and stoop, kneel, crouch, or crawl. The student must work in various weather conditions such as excessive heat or cold. The student must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this field include close vision, distance vision, color vision, peripheral vision, depth perception, and ability to adjust focus.

WELDING TECHNOLOGY

WEL 105 Welding Theory

3 credits (3:0)

This course prepares students to work in an industrial welding shop setting. Students will study the cause and prevention of accidents in shop and in the industry, along with first aid and emergency. Safety, housekeeping, and the proper use and maintenance of tools and equipment are emphasized.

WEL 106 Cutting Processes

3 credits (1.5:1.3)
(Prerequisites: ENV 102, WEL 111. Corequisite: WEL 112)

This course introduces metal cutting and will include cutting of ferrous and nonferrous materials with manual, motor driven, and oxy-fuel shape cutting equipment. Plasma-arc cutting (PAC) and carbon arc cutting (CAC-A) will be included along with an introduction of safety, equipment, and the basic fundamentals of cutting processes.

WEL 111 Shielded Metal Arc Welding

3 credits (1.5:3)

This course includes hands-on application of industrial welding components including safety, identification, set up, and use of shielded metal arc welding (SMAW) equipment. Students perform a variety of welds in the flat and horizontal positions with various electrodes.

WEL 112 Shielded Metal Arc Welding II

3 credits (1.5:3)

(Prerequisites: ENV 102, WEL 105 and WEL 111. Corequisite: WEL 106.)

This course continues the study of shielded metal arc welding while providing a more in-depth instruction on the identification, set up, and use of shielded metal arc welding in an industrial setting. The course also reviews safety and equipment maintenance.

WEL 115 Gas Metal Arc Welding

3 credits (1.5:3)

(Prerequisite: ENV 102, MAT 101, WEL 105, WEL 106, WEL 111, WEL 112, and WEL 150.)

This course includes instruction on proper equipment set up, the development of technical and manipulative skills, and performance of correct safety precautions and techniques utilized in gas metal arc welding (GMAW).

WEL 116 Gas Tungsten Arc Welding

3 credits (1.5:3)

(Prerequisite: ENV 102, MAT 101, WEL 105, WEL 106, WEL 111, WEL 112, WEL 115, WEL 150, WEL 215, and WEL 223.)

This course introduces the basic principles and fundamentals of gas tungsten arc welding. Students learn to safely set the power source of Gas Tungsten Arc Welding (GTAW) equipment to the correct parameters. Students perform GTAW welds on various metals, and in multiple positions, while meeting industry standards.

WEL 120 Fabrication and Production

3 credits (1.5:1.5)

(Prerequisite: ENV 102, MAT 101, WEL 105, WEL 106, WEL 111, WEL 112, and WEL 150.)

This course covers welding processes used in the industry, including arc, oxyacetylene, MIG, soldering, brazing, and fabrication. Spot welding testing, safety procedures and robotic equipment are also covered in the course.

WEL 150 Welding Blueprint Reading

3 credits (3:0)

(Prerequisite and/or Corequisite: ENV 102, MAT 101 and WEL 111, WEL 105

This course is an introduction to blueprint reading and drawing procedures used in the production and fabrication areas of the welding industry. This course involves shape description, size description, and freehand sketching. It incorporates the reading and drawing of welding symbols, as well as interpretation of industrial drawings used in the welding industry. The course includes: applied math for welders, consisting of a review of fractions, decimals, percentages, ratio/proportion calculations, and tape measure reading. This course also includes applications to live welding projects.

WEL 175 Special Topics in Welding

1 credit

Explain gas metal arc welding process (GMAW); demonstrate the safe and correct set up of the GMAW workstation; correlate GMAW electrodes classifications with base metals and joint criteria; build pads of weld beads with 0.35 wire in the flat position; build pads of weld beads produce basic GMAW welds on selected weld joints; and conduct visual inspection of GMAW welds. At the end of this class students will submit a questionnaire paper on what they have learned to receive this one credit.

WEL 215 Gas Metal Arc Welding II

3 credits (1.5:3)

(Prerequisite: ENV 102, MAT 101, WEL 105, WEL 106, WEL 111, WEL 112, WEL 115, and WEL 150.)

This course continues the development of skills and knowledge of gas metal arc welding. It includes a review of safety precautions and procedures and proper equipment set up. Advanced techniques on joint preparation and welding in all positions are emphasized.

WEL 216 Gas Tungsten Arc Welding II

3 credits (1.5:3)

(Prerequisite: ENV 102, MAT 101, WEL 105, WEL 106, WEL 111, WEL 112, WEL 116, and WEL 150.)

This course continues the study of the principles and fundamentals of gas tungsten arc welding. Students review procedures to safely set the power source of a Gas Tungsten Arc Welding (GTAW) to the correct parameters. Students will continue to develop their skills in performing GTAW welds on various metals, and in multiple positions, while meeting industry standards.

WEL 223 Core Wire Welding

3 credits (1.5:2)

(Prerequisite: MAT 101, WEL 105, WEL 106, WEL 111, WEL 112, WEL 115, WEL 150, and WEL 215.)

This course provides instruction in the use of a variety of core wire electrodes. The student will develop skills and knowledge in using various metals and joints and in performing various welds in all positions