WELDING

DESCRIPTION

The Welding program is designed to provide the student with the skills and knowledge necessary to successfully perform the functions of an entry level Welder in various welding processes. Basic Welding includes training in metal cutting and brazing utilizing the Oxyacetylene torch and welding employing four welding processes, (Shielded Metal Arc Welding, Gas Metal Arc Welding, Gas Tungsten Arc Welding and Flux Cored Arc Welding). The program includes knowledge in welding safety; symbols and blue print reading for Welders. The Welding program is also designed to introduce students to the skills and knowledge necessary to successfully perform the functions of an entry level Welder in various shops.

The program is offered in both lectures and "hands-on" practical lab formats.

CLASSIFICATION OF INSTRUCTION (CIP) CIP# CODE: 48.0508 Welding Technology/Welder

ADMINISTRATIVE STANDARD OCCUPATIONAL CLASSIFICATION (SOC): 51.4121, 51-4122, Production Workers Welders, Cutters, and Braziers Welders, Cutters, and Welder Fitters, Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders,

• Total Instructional Hours 720 • Total Quarter Credit Hours 42 • Weeks of Classes 36 • Method of Delivery: Residential		THEORY HOURS		LABORATORY HOURS		MINIMUM WORK OUTSIDE OF CLASSROOM	TOTAL INSTRUCTIONAL HOURS & CREDITS	
Module Number & Title		Clock	Credit	Clock	Credit	Hours	Clock	Credit
Prerequisite Modules								
WB110	Gas Metal Arc Welding Basic	20	2	100	5	14	120	7
WB120	Oxyacetylene, Welding and Cutting	20	2	100	5	14	120	7
WB130	Shielded Metal Arc Welding	20	2	100	5	14	120	7
WB140	Flux Cored Arc Welding/Symbols for Welding	20	2	100	5	14	120	7
WB150	Gas Tungsten Arc Welding	20	2	100	5	14	120	7
WB160	SMAW Structural	20	2	100	5	14	120	7
	Totals	**120**	**12**	**600**	**30**	**84**	**720**	**42**

Teacher/Student Ratio: 1:30 Class / 1:20 Lab *On Ground Lecture (Didactic) and Lab Skills*

DEFINITION OF CLOCK HOUR TO CREDIT HOUR CONVERSION

One Quarter Credit Hour = 10 classroom /lecture hours; or 20 lab/shop hours; or 30 extern hours

*Homework Hours – are estimated and not included in total Clock Hours or Quarter Credit Hours

In the application of this section, for the purpose of official records of the amount of Credit hours Summit College shall round education credit hours down to the nearest half hour of credits actually completed I.e. .50 or .00 –Financial Aid Title IV Clock Hour to Credit hour Conversion may be different please see financial aid for conversions based on Quarter credits.

DESCRIPTION OF INSTRUCTION:

§94909(a)(5)

The Welding courses are taught by lecture, lab. Lecture hours include faculty instruction, classroom activities, assessments, etc. The lab hours are comprised of hours specific to gaining industry related skills included, but not limited to, exercises and activities that strengthen and broaden a student's understanding of the job duties required of them in their chosen field. Homework assignments are given for outside the classroom preparation and reading.

*REQUIREMENTS FOR COMPLETION:

Students must complete courses through demonstrating a satisfactory knowledge of the learning objectives for each course. This is tracked through the student's cumulative GPA and is also monitored through their attendance. Students are required to have 80% overall program attendance. All courses within this program must be complete in order for the student to be eligible for a certificate of completion.

INSTRUCTIONAL MATERIAL/EQUIPMENT

The welding program offers equipment that assists the students to learn various and important welding process such as shielded metal arc welding, gas tungsten, gas metal arc welding, flux cored arc welding and Oxyacetylene. The equipment providing in the shops allows for each student to have time to practice the process specified in that module.

SMAW, TIG and Flux Core machines
Plasma and Carbon Arc Cutter
Oxyacetylene Table
Chop saw & Grinders (various)

UNIFORM/EQUIPMENT/CONSUMABLES

2 – Welding Long Sleeve Shirts, Welding Kit, & Classroom consumables as needed.

BOOK TITLES / DIGITAL COURSEWARE

	ISBN Number
Welding: Principles and Applications	978-0-3573-7778-9
Blueprint Reading for Welders	978-1-133-60578-2
Welding and Metal Fabrication	978-1133483571
Basic Blueprint Reading and Sketching	979-8214116457
Mathematics for Machine Technology	978-1-337-39767-4

GRADING SCALE & BREAKDOWN

Grade	Range	Points	Grade	Range	Points
A	96-100	4.0	C+	76-79	2.3
A-	90-95	3.7	C	70-75	2.0
B+	87-89	3.3	C-	67-69	1.7
B	83-86	3.0	D+	63-66	1.3
B-	80-82	2.7	D	60-62	1.0
			F	0-59	0

Test	20%
Safety	10%
Homework	10%
Attendance	10%
Participation	10%
Skills	40%

MODULE DESCRIPTION

Title: Gas Metal Arc Welding Basic
Course Number: WB110 / IDL WB110_0
Credit/Clock Hours: 7 -- 20 Lecture / 100 Lab
Homework Hours: 14
Course Length: 120 Hours / 6 Weeks
Prerequisite: None

This course provides the student with hands on and a technical understanding of the Gas Metal Arc Welding Process through the usage of the 5 basic weld joints. Students will end the module with the practice on ½" beveled plates.

Title: Oxyacetylene, Welding and Cutting
Course Number: WB120 / IDL WB120_0
Credit/Clock Hours: 7 --20 Lecture / 100 Lab
Homework Hours: 14
Course Length: 120 Hours / 6 Weeks
Prerequisite: None

This course provides the student with hands-on and a technical understanding of Oxyacetylene Welding and Cutting Process. The student will learn to weld on 11g mild steel in all positions Flat, Horizontal, Vertical and Overhead with the inclusion of tube welding in the 5g, and 6g positions. Plasma and Oxyfuel cutting will also be used in the cutting and beveling of steel plate.

Title: Shielded Metal Arc Welding
Course Number: WB130 / IDL WB130_0
Credit/Clock Hours: 7 -- 20 Lecture / 100 Lab
Homework Hours: 14
Course Length: 120 Hours / 6 Weeks
Prerequisite: None

This course provides the student with hands-on and a technical understanding of Shielded Metal Arc Welding Process and will be using a variety of different electrodes such as E7024, E6010, E6011, and E7018. Welding will be done in the Flat, Horizontal, Vertical and Overhead positions. This will also include all 5 Basic Weld Joints.

Title: Flux Cored Arc Welding /Symbols for Welding
Course Number: WB140 / IDL WB140_0
Credit/Clock Hours: 7 -- 20 Lecture /100 Lab
Homework Hours: 14
Course Length: 120 Hours / 6 Weeks
Prerequisite: WB110, 120, 130

The student gets hands on and a technical understanding of Flux Cored Arc Welding. The student will be introduced to the two types of fluxcore. Fluxcore with gas and flux core without, while performing the welds on 3/8" T-joints and 1" single v-groove beveled plates in all positions. The student will acquire an understanding of the principles, systems of views, lines and symbols and dimensional data for fit-up and welding, as provided on engineering drawings or blueprints.

Title: Gas Tungsten Arc Welding /Blueprint Reading
Course Number: WB150 / IDL WB150_0
Credit/Clock Hours: 7 -- 20 Lecture /100 Lab /14 Homework
Course Length: 120 Hours / 6 Weeks
Prerequisite: WB110, 120, 130

This course provides the student with hands on and a technical understanding of Gas Tungsten Arc Welding. The student will be able to produce quality weldments on mild steel and aluminum in the flat, horizontal, vertical positions using ER70S-2 and 4043 Filler metals. The second topic covered in this course is Blue Print Reading for welders and fitters.

Title: SMAW Structural
Course Number: WB160 / IDL WB160_0
Credit/Clock Hours: 7 -- 20 Lecture / 100 Lab /14 Homework
Course Length: 120 Hours / 6 Weeks
Prerequisite: WB110, 120, 130

This course provides the student with hands-on and a technical understanding of Shielded Metal Arc Welding Process for Structural welding. The student will be able to produce quality single v-grooves on 1" mild steel plate in the horizontal, vertical and overhead positions.