



COURSE OUTLINE : WELD 124
D Credit – Degree Applicable
COURSE ID 001550
Cyclical Review: September 2020

COURSE DISCIPLINE : WELD
COURSE NUMBER : 124
COURSE TITLE (FULL) : Occupational Welding IV
COURSE TITLE (SHORT) : Occupational Welding IV
ACADEMIC SENATE DISCIPLINE: Welding

CATALOG DESCRIPTION

WELD 124 is fourth in a series of occupational welding courses designed to prepare the student for employment in the welding industry. It covers the preparation for a welding certification in shielded metal arc welding (SMAW), tungsten inert gas, and metal inert gas arc welding.

Total Lecture Units: 1.00

Total Laboratory Units: 2.00

Total Course Units: 3.00

Total Lecture Hours: 18.00

Total Laboratory Hours: 108.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 126.00

Total Out-of-Class Hours: 36.00

Prerequisite: WELD 123 or equivalent.



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ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	WELD	123	Occupational Welding III	Perform certification standard weldments in the welding process of their choice with emphasis on shielded metal arc welding, flux cored arc welding, or tungsten inert gas welding;	Yes
2	WELD	123	Occupational Welding III	critique and evaluate weldments after proper destructive or non-destructive testing procedures have been implemented;	Yes
3	WELD	123	Occupational Welding III	demonstrate a working knowledge of all the welding processes taught in the shop that apply to a viable job skill;	Yes
4	WELD	123	Occupational Welding III	visually determine if correct or incorrect welding procedures or manipulations were conducted on specific weldments, and what counter-measures if any would bring it up to code;	Yes
5	WELD	123	Occupational Welding III	communicate in writing, steps necessary to fabricate a part from conception to completion.	Yes

EXIT STANDARDS

- 1 Simulate actual certification weld conditions and perform the manipulative skills necessary to complete the test, start to finish, following testing procedures;
- 2 demonstrate a working knowledge of S.M.A.W., G.T.A.W., G.M.A.W., F.C.A.W., O.F.W., P.A.C., welding process applicable to entry level in the welding industry;
- 3 complete written information needed on a job application regarding practical job experience and certification information;
- 4 show a written understanding of welding theory and applications through objective testing procedures;
- 5 evaluate through critical thinking, all the welding processes covered, and determine which area to concentrate in, in the job market place.

STUDENT LEARNING OUTCOMES

- 1 perform and show multiple welding positions while working safely using personal protective equipment during procedure;
- 2 illustrate critical thinking in evaluating work assignments with proper equipment and technique;
- 3 identify and show simulation of actual certification weld conditions while using manipulating skills to complete test.



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COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Advanced Metallic Arc Welding Procedures <ul style="list-style-type: none"> • Welding on 3/8" certification-type plates in all positions using E6010, E7018, E7024 electrodes • Testing procedures on certification welds 	0	40	40
2	Hard Facing Using Metallic Process	0	4	4
3	Welding Cast Iron	0	4	4
4	Welding Stainless Steel	0	4	4
5	Welding Aluminum	0	4	4
6	Advanced Oxyacetylene Process <ul style="list-style-type: none"> • Hard facing • Welding steel in overhead position • Review assignments of welding in all positions using the O/A method 	0	18	18
7	Advanced T.I.G. Welding Processes <ul style="list-style-type: none"> • Vertical, horizontal overhead welding of aluminum 	0	18	18
8	Review Testing of Welds <ul style="list-style-type: none"> • Guided bend test • Tensile test 	0	4	4
9	Review Testing of Welds <ul style="list-style-type: none"> • Physical properties of metals • Classification of steels • Classification of aluminum • Annealing and stress relief • Tempering • Effects of alloying 	0	12	12



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10	Review of Blueprints Reading <ul style="list-style-type: none"> • Welding symbols • Shop math and layout procedures • Alphabet of lines • Sketching 	14	0	14
11	Methods of Identifying Metals	2	0	2
12	Basic Welding Design	2	0	2
				126

OUT OF CLASS ASSIGNMENTS

- 1 essay describing the process used to complete final project;
- 2 final project (e.g. fillet weld on a tee-joint out of position using ARC/MIG process);
- 3 peer analyze welding assignments.

METHODS OF EVALUATION

- 1 comprehensive unit examinations;
- 2 'certification-type' welds will be tested similar to actual testing conditions;
- 3 final exam.

METHODS OF INSTRUCTION

- Lecture
- Laboratory
- Studio
- Discussion
- Multimedia
- Tutorial
- Independent Study
- Collaboratory Learning
- Demonstration
- Field Activities (Trips)
- Guest Speakers
- Presentations



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TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	ISBN	Date
Welding Fundamentals	Required	Goodheart-Willcox	5	print	Bowditch,	978-1-63126-328-6	2017