WELD 312C: ADVANCED GAS METAL ARC WELDING

New Course Proposal

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Originator

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Justification / Rationale

Noncredit mirror of WELD 012C. WELD 312A, WELD 312B and WELD 312C will provide a short term vocational program leading to employment opportunities as Gas Metal Arc (GMAW) welders.

Effective Term

Spring 2021

Credit Status

Noncredit

Subject

WELD - Welding

Course Number

312C

Full Course Title

Advanced Gas Metal Arc Welding

Short Title

ADV GMAW WELDING

Discipline

Disciplines List
Welding

Modality

Face-to-Face

Catalog Description

This capstone course covers the necessary information, preparation, and application to prepare for the American Welding Society (AWS) Welding Certification in Gas Metal Arc Welding (GMAW). The completion of the course will include the opportunity to prepare sample welds and written tests for certification in all positions as defined in the SENSE (Schools Excelling through National Skills Education) certification.

Schedule Description

This course covers all the necessary information, preparation, and application to prepare for Gas Metal Arc Welding (GMAW) certification. Prerequisite: WELD 312B or WELD 012B

Non-credit Hours

108

Lecture Units

0

Lab Units

0

In-class Hours
72

Out-of-class Hours
36

Total Course Units
0

Total Semester Hours
108

Override Description
Non-credit override to mirror credit course.

Prerequisite Course(s)
WELD 312B or WELD 012B

Required Text and Other Instructional Materials

Resource Type
Book

Author
Jeffus, Larry

Title
Welding: Principles and Applications

Edition
8th

Publisher
Cengage Learning

Year
2016

College Level
Yes

Flesch-Kincaid Level
12

ISBN #
978-1305494695

Class Size Maximum
25

Entrance Skills
Explain the advantages of FCAW welding and evaluate its limitations.

Requisite Course Objectives
WELD 012B-Explain the advantages of FCAW welding and evaluate its limitations.
WELD 312B-Explain the advantages of FCAW welding and evaluate its limitations.

Entrance Skills
Explain the various cutting processes, safety considerations of each of the different cutting processes and compare the advantages of using each of the different cutting processes.

Requisite Course Objectives

WELD 012B-Explain the various cutting processes, safety considerations of each of the different cutting processes and compare the advantages of using each of the different cutting processes.
WELD 312B-Explain the various cutting processes, safety considerations of each of the different cutting processes and compare the advantages of using each of the different cutting processes.

Entrance Skills

Explain the acceptable criteria of a visual inspection of a pipe weld.

Requisite Course Objectives

WELD 012B-Explain the acceptable criteria of a visual inspection of a pipe weld.
WELD 312B-Explain the acceptable criteria of a visual inspection of a pipe weld.

Entrance Skills

Demonstrate the ability to make a root pass, filler pass, and cover pass welds using GMAW, FCAW-G, and FCAW-S processes

Requisite Course Objectives

WELD 012B-Demonstrate the ability to make a root pass, filler pass, and cover pass welds using GMAW, FCAW-G, and FCAW-S processes.
WELD 312B-Demonstrate the ability to make a root pass, filler pass, and cover pass welds using GMAW, FCAW-G, and FCAW-S processes.

Entrance Skills

Demonstrate how to grind a tack weld and starts and stops to a featheredge.

Requisite Course Objectives

WELD 012B-Demonstrate how to grind a tack weld and starts and stops to a featheredge.
WELD 312B-Demonstrate how to grind a tack weld and starts and stops to a featheredge.

Course Content

Classroom introduction of the following:

- FCAW Welding
- Welding codes and standards
- Fabrication techniques
- Proper grounding
- Advanced arc welding techniques
- Stringer beads
- Weave beads
- Multi-pass welds
- Joint preparation
- Setup of GMAW welding machine
- Safe working practices using cutting and welding tools
- Safe use cut-off saw
- Safe use of grinder for grinding and cutting
- Plasma cutting
- Oxyacetylene cutting

Course Objectives

	Objectives
Objective 1	Explain how an oxy/fuel torch works including fuel gasses, metals, regulators, torches, and cutting tips, and properly set up and use an oxy/fuel torch using proper personal protective equipment appropriate for oxy/fuel torch use.
Objective 2	Explain the purpose of setting up the FCAW weld station properly.

Objective 3	Demonstrate how to make a root, filler, and cover passes in FCAW welding and prepare welds in the butt, tee, lap, corner, and edge in all positions that can pass a specific standard.
Objective 4	Demonstrate the ability to pass a bend test on a V-grooved weld.
Objective 5	Compare qualification and certification in the welding industry.
Objective 6	Assess the major considerations when selecting a code or standard.
Objective 7	Compile the steps required to certify and/or qualify a weld and a welder.

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Demonstrate proper welding techniques using GMAW welding equipment in the overhead position.
Outcome 2	Prepare all sample welds for SMAW certification as defined in the SENSE certification.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Skilled Practice at a Workstation	Students are given assigned projects with accompanying technical drawings, specifically coupons used to assess weld quality. The instructor assists students with symbols and other questions on the technical drawings. Students are expected to cut and prepare metal and to provide a good fit-up prior to final welding.
Lecture	The instructor uses Google Slides to provide direct instruction at the beginning of the scheduled class.
Self-exploration	Students are expected to read assigned chapters, answer chapter review questions, and be prepared for mid-term and final exams.
Discussion	During direct discussion, students are asked questions and discussion is encouraged.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Written homework	Chapter reviews will be assessed by the instructor.	Out of Class Only
Laboratory projects	Student work samples are self-assessed and then assessed by the instructor.	In Class Only
Presentations/student demonstration observations	Skill demonstration – lab work. Students will be assigned a series of shop projects to be completed in the shop.	In Class Only
Mid-term and final evaluations	Both mid-term and final are in multiple choice format	In Class Only
Student participation/contribution	Welding reflection packet and instructor evaluation. Students are expected to display good work habits, punctuality, and clean-up procedures.	In Class Only
Other	Participation	In Class Only

Assignments

Other In-class Assignments

1. Class discussion
2. Group interaction and presentation
3. Display proper work habits in shop
4. Display soft skills

Other Out-of-class Assignments

1. Reading assignments.
2. Chapter review questions.
3. Students are encouraged to find opportunities outside of class time to practice welding and prepare for certification.

Grade Methods
Pass/No Pass Only

MIS Course Data

CIP Code
48.0508 - Welding Technology/Welder.

TOP Code
095650 - Welding Technology

SAM Code
C - Clearly Occupational

Basic Skills Status
Not Basic Skills

Prior College Level
Not applicable

Cooperative Work Experience
Not a Coop Course

Course Classification Status
Other Non-credit Enhanced Funding

Approved Special Class
Not special class

Noncredit Category
Short-Term Vocational

Funding Agency Category
Not Applicable

Program Status
Program Applicable

Transfer Status
Not transferable

General Education Status
Not applicable

Support Course Status
Course is not a support course

Allow Audit
No

Repeatability
Yes

Repeatability Limit
NC

Repeat Type
Noncredit

Justification
Noncredit courses are repeatable until students have achieved the objectives and outcomes of the course.

Materials Fee
No

Additional Fees?
No

Approvals

Curriculum Committee Approval Date
3/3/2020

Academic Senate Approval Date
3/12/2020

Board of Trustees Approval Date
5/15/2020

Chancellor's Office Approval Date
7/16/2020

Course Control Number
CCC000618923

Programs referencing this course
Gas Metal Arc Welding Certificate of Completion (http://catalog.collegeofthedesert.eduundefined?key=317/)