

WELD 313C: ADVANCED GAS TUNGSTEN ARC WELDING

New Course Proposal

Date Submitted: Tue, 10 Dec 2019 21:24:43 GMT

Originator

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Justification / Rationale

Noncredit mirror of WELD 013C. WELD 313A, WELD 313B and WELD 313C will provide a short term vocational program leading to employment opportunities as Gas Tungsten Arc (GTAW) welders.

Effective Term

Spring 2021

Credit Status

Noncredit

Subject

WELD - Welding

Course Number

313C

Full Course Title

Advanced Gas Tungsten Arc Welding

Short Title

ADV GTAW 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 Tungsten Arc Welding (GTAW). The completion of the course will include the opportunity to prepare sample welds and written tests for certification in all positions.

Schedule Description

This course covers all the necessary information, preparation, and application to prepare for Gas Tungsten Arc Welding (GTAW) certification. Prerequisite: WELD 313B or WELD 011B

Non-credit Hours

108

In-class Hours

72

Out-of-class Hours

36

Total Semester Hours

108

Override Description

Noncredit override.

Prerequisite Course(s)

WELD 313B or WELD 013B

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

Demonstrate how a welding joint in pipe is prepared for welding, apply a hot pass, and further weld the full sequence of welds including root, fill and cap.

Requisite Course Objectives

WELD 013B-Demonstrate how a welding joint in pipe is prepared for welding, apply a hot pass, and further weld the full sequence of welds including root, fill and cap.

WELD 313B-Demonstrate how a welding joint in pipe is prepared for welding, apply a hot pass, and further weld the full sequence of welds including root, fill and cap.

Entrance Skills

Compare the advantages and disadvantages of mechanical or destructive and nondestructive testing and determine why and when welds are tested.

Requisite Course Objectives

WELD 013B-Compare the advantages and disadvantages of mechanical or destructive and nondestructive testing and determine why and when welds are tested.

WELD 313B-Compare the advantages and disadvantages of mechanical or destructive and nondestructive testing and determine why and when welds are tested.

Entrance Skills

Analyze the four most common root defects and determine the cause of each defect.

Requisite Course Objectives

WELD 013B-Analyze the four most common root defects and determine the cause of each defect.

WELD 313B-Analyze the four most common root defects and determine the cause of each defect.

Entrance Skills

Demonstrate how a welding joint in pipe is prepared for welding, apply a hot pass, and further weld the full sequence of welds including root, fill and cap.

Requisite Course Objectives

WELD 013B-Demonstrate how a welding joint in pipe is prepared for welding, apply a hot pass, and further weld the full sequence of welds including root, fill and cap.

WELD 313B-Demonstrate how a welding joint in pipe is prepared for welding, apply a hot pass, and further weld the full sequence of welds including root, fill and cap.

Course Content

Classroom introduction of the following:

- Setup of Gas Tungsten Arc Welding (GTAW) machine
- Proper tungsten preparation
- Proper filler material
- 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
- Oxy/acetylene cutting

Course Objectives

	Objectives
Objective 1	Evaluate weld specimens according to acceptance criteria for butt, lap, and tee joints and perform mechanical testing of weld specimens created by the student.
Objective 2	Demonstrate GTA welding skills needed to make acceptable welds in thin gauge mild steel, stainless steel, and aluminum in all positions.
Objective 3	Demonstrate GTA welding skills needed to make acceptable pipe welds in 2G, 5G, and 6G positions in mild steel, stainless steel, and aluminum pipe and tubing.
Objective 4	Compare the difference between qualification and certification and determine the appropriateness of each use for a given weld including the considerations used when selecting a code or standard.
Objective 5	Demonstrate proper maintenance for the major components of oxyfuel welding equipment.
Objective 6	Properly set up, light, adjust, extinguish, and disassemble oxyfuel welding equipment safely and demonstrate proper maintenance for the major components of oxyfuel welding equipment.
Objective 7	Demonstrate the ability to choose the correct filler metal and explain the criteria used to select proper filler material including the use of proper codes and standards.

Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:

Outcome 1	Demonstrate proper welding techniques by preparing coupons in the five basic welds using GTAW welding equipment in the flat, horizontal, vertical and overhead positions to meet the standard for a certifiable weld.
Outcome 2	Prepare all sample welds for GTAW certification in each weld type and in each of the four positions.

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.
Self-exploration	Students are expected to read assigned chapters, answer chapter review questions, and be prepared for mid-term and final exams
Lecture	The instructor uses Google Slides to provide direct instruction at the beginning of the scheduled class.
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

Allow Audit

No

Repeatability

Yes

Repeatability Limit

NC

Repeat Type

Noncredit

Justification

Noncredit courses are repeatable until students determine they have achieved the outcomes and objectives 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

CCC000618926

Programs referencing this course

Gas Tungsten Arc Welding Certificate of Completion (<http://catalog.collegeofthedesert.eduundefined?key=319/>)