WELD 313B: INTERMEDIATE GAS TUNGSTEN ARC WELDING

New Course Proposal

Date Submitted: Tue, 10 Dec 2019 21:22:25 GMT

Originator

zbecker

Co-Contributor(s)

Name(s)
Pratt, Rory
Gutierrez, Enrique

Justification / Rationale

Noncredit mirror of WELD 013B. WELD 313A, WELD 313B ad 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

313B

Full Course Title

Intermediate Gas Tungsten Arc Welding

Short Title

INTERM GTAW WELDING

Discipline

Disciplines List
Welding

Modality

Face-to-Face

Catalog Description

This course covers intermediate level Gas Tungsten Arc Welding (GTAW). This course includes safe work practices, safety in the welding industry, Computer Numerical Control (CNC) and plasma cutting processes, and the four positions of welding (Horizontal, Flat, Vertical, and Overhead). Students will demonstrate the ability to select the proper machine and settings and to perform the five basic welds in the four welding positions.

Schedule Description

This course covers intermediate level Gas Tungsten Arc Welding (GTAW). This course includes safe work practices, safety in the welding industry, Computer Numerical Control (CNC) and plasma cutting processes, and the four positions of welding. Prerequisite: WELD 313A or WELD 013A

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 313A or WELD 013A

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
Evaluate the gas tungsten arc welding process and the terms used to describe it and explain why the properties of tungsten make it a good electrode for the GTAW welding process.

Requisite Course Objectives
WELD 013A-Evaluate the gas tungsten arc welding process and the terms used to describe it and explain why the properties of tungsten make it a good electrode for the GTAW welding process.
WELD 313A-Evaluate the gas tungsten arc welding process and the terms used to describe it and explain why the properties of tungsten make it a good electrode for the GTAW welding process.

Entrance Skills
Demonstrate how to shape the end of the tungsten electrode, how to clean the tungsten, and how to limit tungsten erosion and explain how tungsten contamination occurs, the symptoms of electrode contamination and the process for removing contamination.

Requisite Course Objectives

WELD 013A-Demonstrate how to shape the end of the tungsten electrode, how to clean the tungsten, and how to limit tungsten erosion and explain how tungsten contamination occurs, the symptoms of electrode contamination and the process for removing contamination.
WELD 313A-Demonstrate how to shape the end of the tungsten electrode, how to clean the tungsten, and how to limit tungsten erosion and explain how tungsten contamination occurs, the symptoms of electrode contamination and the process for removing contamination.

Entrance Skills

Prepare a tungsten electrode using an electric grinder, choose the proper electrode type, and further prepare an electrode by melting into the preferred shape for a given alloy.

Requisite Course Objectives

WELD 013A-Prepare a tungsten electrode using an electric grinder, choose the proper electrode type, and further prepare an electrode by melting into the preferred shape for a given alloy.
WELD 313A-Prepare a tungsten electrode using an electric grinder, choose the proper electrode type, and further prepare an electrode by melting into the preferred shape for a given alloy.

Entrance Skills

Experiment with nozzles and gas lenses, choose the proper shielding gasses, demonstrate the proper gas flow settings and choose the right current and polarity settings for various metals for a given GTAW weld.

Requisite Course Objectives

WELD 013A-Experiment with nozzles and gas lenses, choose the proper shielding gasses, demonstrate the proper gas flow settings and choose the right current and polarity settings for various metals for a given GTAW weld.
WELD 313A-Experiment with nozzles and gas lenses, choose the proper shielding gasses, demonstrate the proper gas flow settings and choose the right current and polarity settings for various metals for a given GTAW weld.

Entrance Skills

Demonstrate proper GTAW butt joints, lap joints, and tee joints in the flat and horizontal positions applied to a specified standard. including the proper torch angle, proper cleaning of base metal, filler rod, and tungsten, keeping the filler inside the protective zone of the shielding gas while welding, and using proper pre-flow and post-flow of the shielding gas.

Requisite Course Objectives

WELD 013A-Demonstrate proper GTAW butt joints, lap joints, and tee joints in the flat and horizontal positions applied to a specified standard. including the proper torch angle, proper cleaning of base metal, filler rod, and tungsten, keeping the filler inside the protective zone of the shielding gas while welding, and using proper pre-flow and post-flow of the shielding gas.
WELD 313A-Demonstrate proper GTAW butt joints, lap joints, and tee joints in the flat and horizontal positions applied to a specified standard. including the proper torch angle, proper cleaning of base metal, filler rod, and tungsten, keeping the filler inside the protective zone of the shielding gas while welding, and using proper pre-flow and post-flow of the shielding gas.

Entrance Skills

Demonstrate the ability to set up and use a plasma torch including proper grounding, proper airflow, and proper current for different thicknesses and types of metal including the proper use of consumables and the replacement of consumables.

Requisite Course Objectives

WELD 013A-Demonstrate the ability to set up and use a plasma torch including proper grounding, proper airflow, and proper current for different thicknesses and types of metal including the proper use of consumables and the replacement of consumables.
WELD 313A-Demonstrate the ability to set up and use a plasma torch including proper grounding, proper airflow, and proper current for different thicknesses and types of metal including the proper use of consumables and the replacement of consumables.

Course Content

Classroom introduction of the following:

- Setup of GTAW welding machine
- Proper tungsten preparation
- Proper filler material
- 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	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.
Objective 2	Analyze the four most common root defects and determine the cause of each defect.
Objective 3	Compare the advantages and disadvantages of mechanical or destructive and nondestructive testing and determine why and when welds are tested.
Objective 4	Evaluate a weld according to a given standard or code.
Objective 5	Using the proper filler metal prefixes and interpreting the standard filler metal numbering system, plan how and when to use each type of filler metal.
Objective 6	Analyze the effects alloys and heat have on ferrous and other metals.

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Demonstrate proper welding techniques using GTAW welding equipment in the vertical position including multiple passes used in pipe welding.
Outcome 2	Demonstrate fabrication techniques including measuring, bending, cutting, and proper cleaning and other preparation techniques for GTAW welding.

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. 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 including real-world scenarios.

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 are 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 research PPE and to practice welding to increase proficiency.

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 the student determines he has met 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
CCC000618925

Programs referencing this course
Gas Tungsten Arc Welding Certificate of Completion (http://catalog.collegeofthedesert.eduundefined?key=319/)