

WELD 313A: INTRODUCTION TO GAS TUNGSTEN ARC WELDING

New Course Proposal

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Originator

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Justification / Rationale

Noncredit mirror of WELD 013A. 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

313A

Full Course Title

Introduction to Gas Tungsten Arc Welding

Short Title

INTRO GTAW WELDING

Discipline

Disciplines List

Welding

Modality

Face-to-Face

Catalog Description

This course covers basic or beginning level Gas Tungsten Arc Welding (GTAW). This course includes safe work practices, safety in the welding industry, welding equipment selection, beginning technical drawings used in the welding industry, measuring and cutting, the five basic welds, and thermal cutting processes including Oxyacetylene (OFC) and Plasma. Students will demonstrate the ability to weld the five basic welds (Butt, Lap, Outside corner, Tee, and Edge) in the horizontal and flat positions using the GTAW process.

Schedule Description

Introductory Gas Tungsten Arc Welding (GTAW) including the five basic welds in the flat and horizontal positions. Includes Oxyacetylene (OFC) and Plasma cutting.

Non-credit Hours

108

In-class Hours

72

Out-of-class Hours

36

Total Semester Hours

108

Override Description

Noncredit override.

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

Course Content

Classroom introduction of the following:

- Setup of GTAW welding machine
- Proper tungsten preparation
- Proper filler material
- Proper grounding
- Fundamentals of arc welding
- Stringer beads
- Weave beads
- Multi-pass welds
- Joint preparation
- 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 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.
Objective 2	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.
Objective 3	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.
Objective 4	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.
Objective 5	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.
Objective 6	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.

Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:	
Outcome 1	Accurately measure, cut, fit and clean metal to prepare it for GTAW welding.
Outcome 2	Demonstrate proper welding techniques using GTAW equipment in the flat and horizontal positions including gas flow setup, amperage settings, proper torch distance, and torch angle.

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-life 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 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

CCC000618924

Programs referencing this course

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