

# WELD 312A: INTRODUCTION TO GAS METAL ARC WELDING

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## New Course Proposal

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### Originator

zbecker

### Co-Contributor(s)

#### Name(s)

Gutierrez, Enrique

Pratt, Rory

### Justification / Rationale

Noncredit mirror of WELD 012A. 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

312A

### Full Course Title

Introduction to Gas Metal Arc Welding

### Short Title

INTRO TO GMAW WELD

### Discipline

#### Disciplines List

Welding

### Modality

Face-to-Face

### Catalog Description

This course covers basic or beginning level Gas Metal Arc Welding (GMAW). 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 GMAW Process.

### Schedule Description

Students are introduced to the safe and efficient practices of Gas Metal Arc Welding (GMAW).

### Non-credit Hours

108

### Lecture Units

0

### Lab Units

0

**In-class Hours**

72

**Out-of-class Hours**

36

**Total Semester Hours**

108

**Override Description**

Noncredit override to match total hours with 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

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**Class Size Maximum**

25

**Course Content**

- Classroom introduction of the following:
  - Sources of electricity for welding
  - The welding circuit
  - Proper grounding
  - Fundamentals of arc welding
  - 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	Explain how each of the major welding processes works and list the factors that must be considered before a welding process is selected.
Objective 2	Use personal protective equipment purposed for welders and evaluate the types of injuries that can occur and methods to prevent injuries.
Objective 3	Integrate the proper use and maintenance of tools and equipment.
Objective 4	Using GMAW equipment, demonstrate proper setup, voltage and wire-feed settings, and use equipment to make a proper GMAW weld for a given weldment.
Objective 5	Evaluate how the GMAW molten weld pool can be controlled by varying the shielding gas, power settings, weave pattern, travel speed, electrode extension, gun angle, and the backhand and forehand welding techniques.
Objective 6	Define voltage, electrical potential, amperage, and electrical current as it applies to GMAW.
Objective 7	Demonstrate how to make each of the five basic welds using the GMAW process in both the flat and horizontal positions.
Objective 8	Use a set of drawings and determine each item shown, its dimensioning, and why a drawing may be scaled, including the major parts of a weld symbol.

### Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Accurately measure, cut, and fit metal to prepare it for welding.
Outcome 2	Demonstrate proper welding techniques for all of the five basic welds using GMAW equipment in the flat and horizontal 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. 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 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 Personal Protective Equipment (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 are comfortable they have achieved the outcomes and objectives of the course and are prepared for employment in the field.

**Materials Fee**

No

**Additional Fees?**

No

**Approvals****Curriculum Committee Approval Date**

3/03/2020

**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**

CCC000618921

**Programs referencing this course**

Gas Metal Arc Welding Certificate of Completion (<http://catalog.collegeofthedesert.eduundefined?key=317/>)