

# WELD 311C: ADVANCED SHIELDED METAL ARC WELDING

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## New Course Proposal

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### Originator

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### Co-Contributor(s)

#### Name(s)

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### Justification / Rationale

Noncredit mirror of WELD 011C. WELD 311A, WELD 311B and WELD 311C will provide a short term vocational program leading to employment opportunities as Shielded metal arc (SMAW) welders.

### Effective Term

Spring 2021

### Credit Status

Noncredit

### Subject

WELD - Welding

### Course Number

311C

### Full Course Title

Advanced Shielded Metal Arc Welding

### Short Title

ADV SMAW 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) Certification in Shielded Metal Arc (SMAW) welding. The completion of the course will include the opportunity to test for AWS SMAW welding certifications in all positions as defined in the Schools Excelling through National Skills Education (SENSE) certification.

### Schedule Description

This course covers all the necessary information, preparation, and application to prepare for welding certification. Prerequisite: WELD 311B or WELD 011B

### 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. Noncredit does not have lecture and lab hours but does have out of class hours.

**Prerequisite Course(s)**

WELD 311B or WELD 011B

**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

**Entrance Skills**

Accurately measure, cut, and fit metal to prepare it for welding, demonstrate proper welding techniques using SMAW equipment in the flat and horizontal, and vertical positions. Students will demonstrate fabrication techniques including measuring, bending, and cutting.

**Requisite Course Objectives**

WELD 011B-Demonstrate how to make a weld in the vertical fixed position and describe the advantages and disadvantages of the vertical fixed position.

WELD 311B-Demonstrate how to make a weld in the vertical fixed position and describe the advantages and disadvantages of the vertical fixed position.

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**Entrance Skills**

Explain three general categories of pipe welds, including how they are used and what type of weld root penetration and strength they require.

**Requisite Course Objectives**

WELD 011B-Explain three general categories of pipe welds, including how they are used and what type of weld root penetration and strength they require and the advantage of welded pipe over fitted pipe.

WELD 311B-Explain three general categories of pipe welds, including how they are used and what type of weld root penetration and strength they require and the advantage of welded pipe over fitted pipe.

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**Entrance Skills**

Assess the preparation needed before welding pipe, explain the purpose of a 'Hot pass,' and connect the purpose of root, filler, and cove passes for a pipe weld.

**Requisite Course Objectives**

WELD 011B-Assess the preparation needed before welding pipe, explain the purpose of a 'Hot pass,' and connect the purpose of root, filler, and cove passes for a pipe weld.

WELD 311B-Assess the preparation needed before welding pipe, explain the purpose of a 'Hot pass,' and connect the purpose of root, filler, and cove passes for a pipe weld.

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**Entrance Skills**

Demonstrate and compare different methods of controlling heat distortion.

**Requisite Course Objectives**

WELD 311B-Demonstrate and compare different methods of controlling heat distortion.

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**Entrance Skills**

Compare various cutting processes and analyze the appropriate process for a given metal or type of weldment.

**Requisite Course Objectives**

WELD 011B-Compare various cutting process and analyze the appropriate process for a given metal or type of weldment.

WELD 311B-Compare various cutting process and analyze the appropriate process for a given metal or type of weldment.

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**Entrance Skills**

Use the proper eye protection and other personal protective equipment that should be used with flame cutting and compare flame-cutting PPE to arc welding PPE.

**Requisite Course Objectives**

WELD 011B-Use the proper eye protection and other personal protective equipment that should be used with flame cutting and compare flame-cutting PPE to arc welding PPE.

WELD 311B-Use the proper eye protection and other personal protective equipment that should be used with flame cutting and compare flame-cutting PPE to arc welding PPE.

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**Course Content**

- Classroom introduction of the following:
  - Welding codes and standards
  - Fabrication techniques
  - Proper grounding
  - Advanced arc welding techniques
  - Stringer beads
  - Weave beads
  - Multi-pass welds
  - Joint preparation
  - Setup of SMAW 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	Demonstrate root passes with or without backing plate, hot passes, filler passes, and cover passes on plate and pipe.
Objective 2	Prepare bend test specimens for plate and pipe.
Objective 3	Explain how a plasma torch works and properly set up and use a plasma torch using proper personal protective equipment appropriate for plasma torch use.
Objective 4	Compare qualification and certification in the welding industry.
Objective 5	Assess the major considerations when selecting a code or standard.
Objective 6	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 SMAW 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 are assessed by instructor.	Out of Class Only
Laboratory projects	Student work samples are self-assessed and assessed by 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 achieve the outcomes and objectives of the course.

**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**

CCC000618920

**Programs referencing this course**Shielded Metal Arc Welding Certificate of Completion (<http://catalog.collegeofthedesert.eduundefined?key=318/>)