WELD 311B: INTERMEDIATE SHIELDED METAL ARC WELDING

New Course Proposal

Date Submitted: Tue, 10 Dec 2019 21:07:51 GMT

Originator

zbecker

Co-Contributor(s)

Name(s)
Pratt, Rory
Gutierrez, Enrique

Justification / Rationale

Noncredit mirror of WELD 011B. 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

311B

Full Course Title

Intermediate Shielded Metal Arc Welding

Short Title

INTERM SMAW WELDING

Discipline

Disciplines List
Welding

Modality

Face-to-Face

Catalog Description

This course covers intermediate level Shielded Metal Arc (SMAW) welding. This course includes safe work practices, safety in the welding industry, Computer Numerical Control (CNC) 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 is the second course in the Shielded Metal Arc (SMAW) Welding series. This course builds on Weld 311A (or WELD 011A) and helps prepare students for the American Welding Society (AWS) certificate. Prerequisite: WELD 311A or WELD 011A

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 include out of class hours that match credit course WELD 011B.

Prerequisite Course(s)
WELD 311A or WELD 011A

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 to make each of the five basic welds using the SMAW process in both the flat and horizontal positions.

Requisite Course Objectives
WELD 011A-Demonstrate how to make each of the five basic welds using the SMAW process in both the flat and horizontal positions.
WELD 311A-Demonstrate how to make each of the five basic welds using the SMAW process in both the flat and horizontal positions.

Entrance Skills
Explain how each of the major welding processes works and list the factors that must be considered before a welding process is selected.

Requisite Course Objectives

WELD 011A-Explain how each of the major welding processes works and list the factors that must be considered before a welding process is selected.
WELD 311A-Explain how each of the major welding processes works and list the factors that must be considered before a welding process is selected.

Entrance Skills

Use personal protective equipment purposed for welders and evaluate the types of injuries that can occur and methods to prevent injuries.

Requisite Course Objectives

WELD 011A-Use personal protective equipment purposed for welders and evaluate the types of injuries that can occur and methods to prevent injuries.
WELD 311A-Use personal protective equipment purposed for welders and evaluate the types of injuries that can occur and methods to prevent injuries.

Entrance Skills

Evaluate the quality of an existing weld by looking for evidence of the factors that cause low-quality welds and using too long or too short of an arc length.

Requisite Course Objectives

WELD 011A-Evaluate the quality of an existing weld by looking for evidence of the factors that cause low-quality welds, including arc blow, poor lead clamping, improper current, overheating welds and using too long or too short of an arc length.
WELD 311A-Evaluate the quality of an existing weld by looking for evidence of the factors that cause low-quality welds, including arc blow, poor lead clamping, improper current, overheating welds and using too long or too short of an arc length.

Entrance Skills

Select the proper welding cable size, proper electrode size and proper heat settings to make a high-quality weld.

Requisite Course Objectives

WELD 011A-Select the proper welding cable size, proper electrode size, and proper heat settings to make a high-quality weld.
WELD 311A-Select the proper welding cable size, proper electrode size, and proper heat settings to make a high-quality weld.

Course Content

- Classroom introduction of the following:
- Pipe welding
- Fabrication techniques
- Proper grounding
- Fundamentals of arc welding
- 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
- Oxyacetylene cutting

Course Objectives

	Objectives
Objective 1	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.

Objective 2	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.
Objective 3	Describe the vertical fixed position and the advantages and disadvantages.
Objective 4	Demonstrate how to make a weld in the vertical fixed position and describe the advantages and disadvantages of the vertical fixed position.
Objective 5	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.
Objective 6	Demonstrate the oxyfuel gas cutting process and compare fuel gases, metals, regulators, torches, and cutting tips.
Objective 7	Compare various cutting processes and analyze the appropriate process for a given metal or type of weldment.
Objective 8	Modify parts to meet tolerance specifications called for in technical drawings, demonstrate how to assemble and fit up parts for welding, and estimate the advantage of custom welding parts.
Objective 9	Demonstrate and compare different methods of controlling heat distortion.

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 vertical position
Outcome 2	Demonstrate fabrication techniques including measuring, bending, cutting, metal preparation, metallurgy and the properties of different metals, and the importance of proper fit-up of weldments based on technical drawings.

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.

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	Out of Class Only
Laboratory projects	Student work samples	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. Laboratory assignments/Welding projects.

Other Out-of-class Assignments

1. Reading assignments: Students are required to read four selected chapters from the textbook and to answer chapter review questions for each chapter.
2. Students are expected to use the materials from their chapter review work to study and prepare for mid-term and final tests.
3. Students are encouraged to find opportunities outside of class time to practice welding techniques.

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 have achieved 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
CCC000618919

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