COLLEGE of the DESERT

WELD 011A: INTRODUCTION TO SHIELDED METAL ARC WELDING

Originator

rpratt

Co-Contributor(s)

Name(s)
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Justification / Rationale

To align with AWS SENSE and create a sequence of courses that lead to an entry-level welder certificate demonstrating proficiency in welding and providing career options for students.

Effective Term

Fall 2020

Credit Status

Credit - Degree Applicable

Subject

WELD - Welding

Course Number

011A

Full Course Title

Introduction to Shielded Metal Arc Welding

Short Title

INTRO SMAW WELDING

Discipline

Disciplines List
Welding

Modality

Face-to-Face

Catalog Description

This course covers basic or beginning level SMAW welding. 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 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 SMAW process.

Schedule Description

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Lecture Units

1

Lecture Semester Hours

18

Lab Units

1

Lab Semester Hours
54

In-class Hours
72

Out-of-class Hours
36

Total Course Units
2

Total Semester Hours
108

Required Text and Other Instructional Materials

Resource Type
Book

Open Educational Resource
No

Author
Jeffus, Larry

Title
Welding: Principles and Applications

Edition
8th

City
NY

Publisher
Cengage Learning

Year
2017

College Level
Yes

Flesch-Kincaid Level
12

ISBN #
9781305494695

Class Size Maximum
25

Course Content
1. 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 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

Lab Content

1. Lab demonstration and practice of the following:
   - Butt welds in the flat position
   - Butt welds in the horizontal position
   - Lap welds in the flat position
   - Lap welds in the horizontal position
   - Outside corner welds in the flat position
   - Outside corner welds in the horizontal position
   - T welds in the flat position
   - T welds in the horizontal position
   - Edge welds in the flat position
   - Edge welds in the horizontal position

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	Select the proper welding cable size, proper electrode size, and proper heat settings to make a high-quality weld.
Objective 5	Demonstrate how to make each of the five basic welds using the SMAW process in both the flat and horizontal positions.
Objective 6	Using 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.
Objective 7	Demonstrate the ability to strike an arc at any given point.
Objective 8	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.
Objective 9	Compare a leading electrode angle to a trailing electrode angle and identify the proper electrodes for each.
Objective 10	Categorize the five major types of welding joints.

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 using SMAW 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. 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	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

Assignments

Other In-class Assignments

1. Class discussion.
2. Group interaction and presentation.
3. Laboratory assignments/Welding projects.

Other Out-of-class Assignments

a. Reading assignments: Students are required to read four selected chapters from the textbook and to answer chapter review questions for each chapter.

b. Students are expected to use the materials from their chapter review work to study and prepare for mid-term and final tests.

Grade Methods

Letter Grade 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

Credit Course

Approved Special Class

Not special class

Noncredit Category

Not Applicable, Credit Course

Funding Agency Category

Not Applicable

Program Status

Program Applicable

Transfer Status

Not transferable

Allow Audit

No

Repeatability

No

Materials Fee

No

Additional Fees?

No

Files Uploaded

Attach relevant documents (example: Advisory Committee or Department Minutes)

ZNE Meeting Minutes 031618.docx

Approvals

Curriculum Committee Approval Date

9/03/2019

Academic Senate Approval Date

9/12/2019

Board of Trustees Approval Date

10/31/2019

Chancellor's Office Approval Date

12/02/2019

Course Control Number

CCC000609542

Programs referencing this course

Automotive Air Conditioning Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined?key=104/)
Automotive Braking Systems Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined?key=109/)
Automotive Steering, Suspension, Alignment Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined?key=112/)
Shielded Metal Arc Welding Certificate (http://catalog.collegeofthedesert.eduundefined?key=232/)
Welding Technology SENSE Entry-Level Welder Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined?key=235/)