Miami Dade College

GENERAL INFORMATION	
Course Prefix/Number: ETI 2408C	Course Title: Welding Processes
Number of Credits: 3	
Degree Type	☐ B.A. ☐ B.S. ☐ B.A.S ☐ A.A. ☒ A.S. ☐ A.A.S. ☐ C.C.C. ☐ A.T.C. ☐ V.C.C
Date Submitted: 01-28-2008	Effective Year/Term: 2007-3
☒ New Course Competency ☐ Revised Course Competency	
Course to be designated as a General Education course (part of the 36 hours of A.A. Gen. Ed. coursework): ☐ Yes ☒ No	

The above course links to the following Learning Outcomes:

☒ Communication	☐ Social Responsibility
☐ Numbers / Data	☐ Ethical Issues
☒ Critical thinking	☐ Computer / Technology Usage
☐ Information Literacy	☐ Aesthetic / Creative Activities
☐ Cultural / Global Perspective	☐ Environmental Responsibility

Course Description (limit to 50 words or less):

This course is designed for students who require basic welding process skills to prepare themselves for entry-level maintenance technician positions. The student learns principles of welding safety, fundamental practices of shielded arc welding, arc welding with consumable and non-consumable electrodes, brazing, soldering, and plasma cutting. Prerequisite: ETI2425C. Laboratory fee. A.S. degree credit only. (2 hr lecture, 2 hr lab).

Prerequisite(s): ETI2425C	Co requisite(s): none

Course Competencies:

Competency 1: The student will demonstrate an understanding of the fundamentals of welding within a power plant setting by:

1. Describing the various welding and joining processes and the appropriate application of each.
2. Explaining the methods of applying weld, and the appropriate application of each.
3. Stating the use and components of the American Welding Society (AWS) Welding Procedure Specification as well as the standard format and criteria for the power plant welding procedure specification.
5. Discussing the physics and chemistry of welding.

Competency 2: The student will demonstrate the use of industry accepted welding safety and health precautions and procedures by:

1. Describing the hazards related to welding.
2. Identifying appropriate dress and demonstrating the use of safety equipment used by welders.
3. Stating the standard safety precautions for welding applications.
4. Discussing Material Safety Data Sheets.
5. Demonstrating recognized electrical safety procedures.

Competency 3: The student will demonstrate knowledge of the fundamentals of shielded arc welding by:

Revision Date: 02-27-2008

Approved By Academic Dean Date: _____ Reviewed By Director of Academic Programs Date: _____

1. Describing and demonstrating standard safety practices related to shielded arc welding.
2. Demonstrating the proper use, set-up, and handling of equipment used in shielded arc welding.
3. Demonstrating proper techniques of shielded arc welding.
4. Discussing the principles of shielded metal arc welding.
5. Explaining the major advantages and disadvantages of shielded metal arc welding processes.

Competency 4: The student will demonstrate knowledge of the fundamentals of arc welding with a non-consumable electrode by:

1. Explaining the process, advantages, limitations, and uses of arc welding with a non-consumable electrode.
2. Describing the various types and uses of non-consumable electrodes, including tungsten.
3. Demonstrating arc welding with a non-consumable electrode, including gas tungsten Arc welding.
4. Demonstrating the proper use, set-up, and handling of equipment used in Gas Tungsten Arc welding.

Competency 5: The student will demonstrate knowledge of the fundamentals of arc welding with a consumable electrode by:

1. Explaining the process, advantages, limitations, and uses of arc welding with a consumable electrode.
2. Discussing metal transfer across the arc when using consumable electrodes.
3. Describing the various types and uses of welding consumables.
4. Explaining the various types and uses of welding gases.
5. Demonstrating arc welding with consumable electrode, including shielded metal Arc welding.
6. Discussing the factors essential for maintaining high-quality welds, including: correct electrode type, correct electrode size, correct current, correct arc length, correct travel speed, correct electrode angle, and correct manipulation pattern.

Competency 6: The student will demonstrate an understanding of brazing and soldering by:

1. Explaining the types, functions, and disadvantages of brazing.
2. Identifying the types, properties, and applications of filler metals used in brazing.
3. Applying proper techniques of brazing.
4. Explaining the types, functions, and disadvantages of soldering.
5. Distinguishing between brazing and soldering and discussing the appropriate uses and applications of each process.
6. Identifying the types, properties, and applications of filler metals used in soldering.
7. Demonstrating correct soldering techniques.
8. Applying proper techniques for the set-up, handling and use of equipment used in brazing and soldering.

Competency 7: The student will demonstrate an understanding of plasma cutting by:

1. Explaining why and when to use plasma cutting.
2. Selecting and setting up equipment for plasma cutting, including tips, torch size, and gauge pressure.
3. Showing the proper use and handling of equipment used in plasma cutting.

Revision Date: 02-27-2008

Approved By Academic Dean Date: _____ Reviewed By Director of Academic Programs Date: _____

4. Performing proper cutting techniques.
5. Discussing and demonstrating proper safety practice related to plasma cutting.

Revision Date: 02-27-2008

Approved By Academic Dean Date: _____ Reviewed By Director of Academic Programs Date: _____