DAKOTA COUNTY TECHNICAL COLLEGE

DCTC.EDU

WELDING SAFETY AND THEORY II — WELD 1210

A. **Course Description**

- **Credits:** 3.00
- **Lecture Hours/Week:** 3.00
- **Lab Hours/Week:** 0.00
- **OJT Hours/Week:** 0
- **Prerequisites:** None
- **Corequisites:** None
- **MnTC Goals:** None

Upon completion of this course, students will understand metallurgy as it pertains to base metal and its alloying elements. Students will understand basic safety practices associated within the welding industry and will learn about advanced welding processes and cutting technology. Students will interpret code specifications with testing and inspection gauges. Prerequisites: Welding Safety and Theory I

B. **Course Effective Dates:** 8/27/12 – Present

C. **Outline of Major Content Areas**

As noted on course syllabus

D. **Learning Outcomes**

1. Define heat affected zone (HAZ).
2. Define tensile strength and unites of measure.
3. Define weldability, and explain the purposes of preheating metals.
4. Demonstrate knowledge in advanced industry safety standards on Lock-out/Tag-out, confined space permit entry, ladder safety, fall protection, and overhead hoist operation.
5. Demonstrate knowledge in advanced theory on Carbon Arc Gouging, Plasma Arc Gouging, and Oxy-Fuel Gouging.
6. Describe common alloys and their properties.
7. Describe heat treating and annealing processes of steel.
8. Describe the physical metallurgical properties of multiple types of common steel.
9. Differentiate between procedure qualification record (PQR), weld procedure specification (WPS), and welding qualification record (WQR) inspection processes.
10. Explain the importance of correctly matching filler metal to base metal.
11. Interpret SAE, AISI, and AA classification systems for stainless steel, aluminum, and cast iron.
12. List and define destructive testing (DT) processes.

13. List and define non-destructive testing (NDT) for all welding processes including radiographic and ultrasonic.
14. List national codes that govern welding.
15. Understand how to cut multiple thicknesses of metal using various processes.

E. **Minnesota Transfer Curriculum Goal Area(s) and Competencies**

F. **Learner Outcomes Assessment**

As noted on course syllabus

G. **Special Information**

None noted