

## COURSE SYLLABUS

<b>LAST REVIEW</b>	Fall 2022
<b>COURSE TITLE</b>	Stainless Steel Welding
<b>COURSE NUMBER</b>	WELD 0260
<b>DIVISION</b>	Career and Technical Education
<b>DEPARTMENT</b>	WELD
<b>CIP CODE</b>	48.0508
<b>CREDIT HOURS</b>	4
<b>CONTACT HOURS/WEEK</b>	Class: 1    Lab: 6
<b>PREREQUISITES</b>	WELD 0100

### COURSE DESCRIPTION

Through a variety of classroom and/or shop/lab learning and assessment activities, the students in this course will: learn metal preparation, GMAW, GTAW, safety and metallurgy as they apply to stainless steel welding.

### PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:

[https://kansasregents.org/workforce\\_development/program-alignment](https://kansasregents.org/workforce_development/program-alignment)

### PROGRAM LEARNING OUTCOMES

1. The student will be able to identify high risk areas that should be avoided by operators while automated machinery is running.
2. After completing the program, students will be able to exhibit a high-level of professionalism including appropriate dress, attendance, communication skills and other soft skills necessary
3. The student will be able to demonstrate the ability to successfully complete a welding project.

### TEXTBOOKS

<http://kckccbookstore.com/>

### METHOD OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to lecture, multimedia, cooperative/collaborative learning, labs and demonstrations,

projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

## **COURSE OUTLINE**

- I. Stainless Steel Metallurgy
  - A. Properties of stainless steel
  - B. Stainless steel alloys and their uses
- II. Stainless steel inspection
  - A. Weld profiles
  - B. Heat Affected Zone (HAZ)
  - C. Other flaws
- III. GMAW of stainless steel
  - A. Flat position fillet welds
  - B. Flat position groove welds
  - C. Horizontal position fillet welds
  - D. Horizontal position groove welds
- IV. GTAW of stainless steel
  - A. Flat position fillet welds
  - B. Flat position groove welds
  - C. Horizontal position fillet welds
  - D. Horizontal position groove welds

## **COURSE LEARNING OUTCOMES AND COMPETENCIES**

Upon successful completion of this course, the student will:

- A. Identify various stainless-steel alloys and their characteristics.
  - 1. Differentiate various stainless-steel alloys based on alloy naming system.
  - 2. Select proper filler metal for welding stainless steel alloys with GMAW.
  - 3. Select proper filler metal for welding stainless steel alloys with GTAW.
- B. Perform GMAW welds on stainless steel in the flat and horizontal positions.
  - 4. Properly set up GMAW station for welding stainless steel.
  - 5. Select proper shielding gasses for welding stainless steel alloys with GMAW.
  - 6. Properly layout and tack stainless steel coupons for GMAW.
  - 7. Properly prepare surface of stainless steel for GMAW.
  - 8. Perform several fillet welds in the flat position to given performance standard.
  - 9. Perform a groove weld on stainless steel in the flat position to given performance standard.
  - 10. Perform several fillet welds on stainless steel in the horizontal position to given performance standard.
  - 11. Perform a groove weld on stainless steel in the horizontal position to given performance standard.
- C. Perform GTAW welds on stainless steel in the flat and horizontal positions.
  - 12. Properly set up GTAW station for welding stainless steel.
  - 13. Select proper electrode for welding stainless steel alloys with GTAW.
  - 14. Prepare electrode for welding stainless steel alloys with GTAW.
  - 15. Select proper shielding gasses for welding stainless steel alloys with GTAW.

16. Properly layout and tack stainless steel coupons for GTAW.
  17. Properly prepare surface of stainless steel for GTAW.
  18. Perform several fillet welds in the flat position to given performance standard.
  19. Perform a groove weld on stainless steel in the flat position to given performance standard.
  20. Perform several fillet welds on stainless steel in the horizontal position to given performance standard.
  21. Perform a groove weld on stainless steel in the horizontal position to given performance standard.
- D. Perform inspections on stainless steel welds to check for conformance with specific criteria.
22. Inspect weld beads for profile to determine acceptability to given specification.
  23. Inspect GTAW beads to determine if AC balance is in proper place.
  24. Inspect weld beads with DPT to determine acceptability to given specification.
  25. Inspect GMAW fillet weld with break test or macro etch specimen to determine penetration.
  26. Inspect GTAW fillet weld with break test or macro etch specimen to determine penetration.
  27. Inspect weld with bend test to determine acceptability to given specification.

### **ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES**

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

### **COLLEGE POLICIES AND PROCEDURES**

*Student Handbook*

<https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf>

*College Catalog*

<https://www.kckcc.edu/academics/catalog/index.html>

*College Policies and Statements*

<https://www.kckcc.edu/about/policies-statements/index.html>

*Accessibility and Accommodations*

<https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html>.