COURSE SYLLABUS

LAST REVIEW	Fall 2022
COURSE TITLE	SMAW
COURSE NUMBER	WELD 0120
DIVISION	Career and Technical Education
DEPARTMENT	WELD
CIP CODE	48.0508
CREDIT HOURS	**3**
CONTACT HOURS/WEEK	Class: 1 Lab: 4
PREREQUISITES	WELD 0100

COURSE DESCRIPTION

Through classroom and/or lab/shop learning and assessment activities, students in this course will: describe the Shielded Metal Arc Welding process (SMAW); demonstrate the safe and correct set up of the SMAW workstation; associate SMAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; build pads of weld beads with selected electrodes in the flat position; build pads of weld beads with selected electrodes in the horizontal position; perform basic SMAW welds on selected weld joints; and perform visual inspection of welds.

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

PROGRAM LEARNING OUTCOMES

1. Students will be able to explain job/site and precautions for job site hazards and will be able to determine the use of Personal Protective equipment (PPE) as well as be able to Identify the safety equipment and procedures related to safe work practices and environment

2. Student will be able to demonstrate the use of good communication skills including listening, following directions, speaking, and using correct grammar in conducting a job search.

3. Student will be able to create fillet and groove welds in flat and horizontal positions and identify common visual discontinuities and defects on welds and determine causes of discontinuities and defects of welds.

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. SMAW Processes and equipment
   A. SMAW equipment
      i. Welding station components
      ii. Power sources
      iii. Welding leads
   B. SMAW process theory
      i. Machine settings
      ii. Electrode specifications
II. SMAW welding in the flat position
   A. Fillet welds (1F)
   B. Groove welds (1G)
III. SMAW welding in the horizontal position
   A. Fillet welds (2F)
   B. Groove welds (2G)
IV. Weld inspection
   A. SMAW visual inspection
      i. Visual inspection criteria
      ii. Common discontinuities in flat and horizontal positions
   B. SMAW destructive weld testing
      i. Weld test joint set up
      ii. Preparing test specimens
      iii. Destructive test criteria

COURSE LEARNING OUTCOMES AND COMPETENCIES
Upon successful completion of this course, the student will:

A. Explain the Shielded Metal Arc Welding process (SMAW).
   1. Differentiate between types and uses of current
   2. Identify the advantages and disadvantages of SMAW
   3. Identify types of welding power sources
   4. Identify different components of a SMAW station

5. Describe basic electrical safety

B. Demonstrate the safe and correct set up of the SMAW workstation.
   6. Demonstrate proper inspection of equipment
   7. Demonstrate proper use of PPE
   8. Demonstrate proper placement of workpiece connection
   9. Check for proper setup of equipment
   10. Inspect area for potential hazards/safety issues

C. Relate SMAW electrode classifications with base metals and joint criteria
   11. Explain the AWS electrode nomenclature
   12. Determine proper electrode for given joint based on material and position of weld
   13. Determine proper type of electrodes to be used in a variety of industry applications
   14. Identify proper electrode storage and handling

D. Demonstrate proper electrode selection and use based on metal types and thicknesses
   15. Select the proper electrode type and size relative to metal size, type and thickness
   16. Select the proper electrode type and size based on material specifications

E. Build pads of weld beads with selected electrodes in the flat position
   17. Use the proper safety procedures and PPE
   18. Use the proper setup procedures
   19. Create a pad of beads using SMAW electrode
   20. Weld exhibits proper uniformity and profile

F. Build pads of weld beads with selected electrodes in the horizontal position
   21. Use the proper safety procedures and PPE
   22. Use the proper setup procedures
   23. Create a pad of beads using SMAW electrode
   24. Weld exhibits proper uniformity and profile

G. Perform basic SMAW welds on selected weld joints.
   25. Use the proper setup procedures
   26. Use the proper safety procedures and PPE
   27. Perform a fillet weld in horizontal position
   28. Perform fillet weld in flat position
   29. Perform a groove weld in a flat position
   30. Perform a groove weld in a horizontal position
   31. Use tools appropriate for the task

H. Perform visual inspection of welds
   32. Identify common visual discontinuities and defects on welds
   33. Determine causes of discontinuities and defects of welds
   34. Inspect welds for pass/fail ratings according to industry standards
   35. Use appropriate inspection tools.

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.