

Bossier Parish Community College
Master Syllabus

Course Prefix and Number: WELD 105

Credit Hours: 4-3-3

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Course Title: Advanced Gas Tungsten Arc Welding (GTAW)

Course Prerequisites: READ 099; MATH 098; WELD 101 OR Previous weld training or welding experience.

Textbook: AWS SENSE Program

Course Description: Covers the knowledge, skills, and abilities required of an AWS Level II Advanced Welder for gas tungsten arc welding (GTAW) including welding safety, welding theory, welding equipment set-up, structural and pipe layout, weld joint fit-up, welding codes and standards, qualification, certification, welding inspection and testing.

Learning Outcomes:

At the end of this course, the student will or will be able to:

- A. Demonstrate knowledge of occupational orientation skills
- B. Demonstrate a fundamental knowledge of layout and fit-up principles
- C. Understand documents governing welding and welding inspection
- D. Understand basic principles of welding metallurgy
- E. Understand welding inspection and testing principles
- F. Recognize the principles of and demonstrate the ability to use gas tungsten arc welding (GTAW)

To achieve the learning outcomes, the student will or will be able to:

(The letter designations at the end of each statement refer to the learning outcome(s).)

1. Follow safe practices. (A)
2. Prepare time or job cards, reports or records. (A)
3. Perform housekeeping duties. (A)
4. Follow verbal instructions to complete work assignments. (A)
5. Follow written details to complete work assignments. (A)
6. Follow safe operating procedures. (B)
7. Select shop equipment. (B)
8. Set up shop equipment. (B)
9. Operate shop equipment. (B)
10. Operate lifting equipment. (B)
11. Layout parts using advanced measurement practices. (B)
12. Follow safe handling procedures. (B)

13. Select layout tools. (B)
14. Interpret drawing, sketch or specification information. (B)
15. Prepare work area for layout. (B)
16. Prepare material lists. (B)
17. Select material. (B)
18. Layout material. (B)
19. Perform bending or forming operations. (B)
20. Perform drilling or boring operations. (B)
21. Perform shearing operations. (B)
22. Perform oxyfuel gas cutting, beveling and piercing operations. (B)
23. Perform arc cutting, beveling and piercing operations. (B)
24. Fit-up parts or assemblies. (B)
25. Locate essential welding information from a code or other standard. (C)
26. Locate essential information for welding procedure and performance qualification. (C)
27. Recognize fundamental principles related to welding metallurgy. (D)
28. Recognize fundamental principles related to the properties of metals. (D)
29. Recognize fundamental principles related to residual stress and distortion. (D)
30. Recognize the role of welding inspection and testing in industry. (E)
31. Examine cut surfaces and edges of prepared base metal parts. (E)
32. Examine tack, intermediate layers, and completed welds. (E)
33. Perform safety inspections of equipment and accessories. (F)
34. Make minor external repairs to equipment and accessories. (F)
35. Set up for gas tungsten arc welding operations on carbon steel, aluminum, and stainless steel. (F)
36. Operate gas tungsten arc welding equipment. (F)
37. Execute corrective actions to repair surface flaws on welds and base metals. (F)
38. Make 3F and 4F fillet welds on aluminum sheet. (F)
39. Make 2G and 4G groove welds on aluminum sheet. (F)
40. Make 4F fillet welds, on stainless steel sheet. (F)
41. Make 3G 4G groove welds on stainless steel sheet. (F)
42. Make fillet welds, all positions on carbon steel round tubing. (F)
43. Make fillet welds, all positions on aluminum round tubing. (F)
44. Make fillet welds, all positions on stainless round tubing. (F)
45. Make 2G and 5G groove welds on carbon steel round tubing. (F)
46. Make 2G and 5G groove welds on aluminum round tubing. (F)
47. Make 2G and 5G groove welds on stainless steel round tubing. (F)
48. Perform combination workmanship qualification tests on carbon steel round tubing & sheet. (F)
49. Perform combination workmanship qualification tests on aluminum round tubing & sheet. (F)
50. Perform combination workmanship qualification tests on stainless steel round tubing & sheet. (F)

Course Requirements: Complete all homework assignments, in-class equipment exercises, in class tests, and final exam.

Course Grading Scale:

90–100 = A

80–89 = B

70–79 = C

60–69 = D

0 – 59 = F

Attendance Policy: The college attendance policy is available at <http://www.bpcc.edu/catalog/current/academicpolicies.html>

Course Fees: This course is accompanied with an additional non-refundable fee for supplemental materials, laboratory supplies, software licenses, certification exams and/or clinical fees.

Nondiscrimination Statement: Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

COORDINATOR FOR SECTION 504 AND ADA

Angie Cao, Student and Disability Services Specialist

Disability Services, F-254

6220 East Texas Street

Bossier City, LA 71111

Phone: 318-678-6511

Email: acao@bpcc.edu

Hours: 8:00 a.m.-4:30 p.m. Monday - Friday, excluding holidays and weekends.

Equity/Compliance Coordinator

Teri Bashara, Director of Human Resources

Human Resources Office, A-105

6220 East Texas Street

Bossier City, LA 71111

Phone: 318-678-6056

Hours: 8:00 a.m.-4:30 p.m. Monday - Friday, excluding holidays and weekends.