MASTER COURSE OUTLINE
Prepared By: Shawn McDaniel Date: August 2013

COURSE TITLE
Gas Tungsten Arc Welding (TIG)

GENERAL COURSE INFORMATION

Dept.: WLD	Course Num: 132	(Formerly:)
CIP Code: 48.0508	Intent Code: 21	Program Code: 814
Credits: 3		
Total Contact Hrs Per Qtr.: 66		
Lecture Hrs:	Lab Hrs:66	Other Hrs:
Distribution Designation:		

COURSE DESCRIPTION (as it will appear in the catalog)
Students will learn to apply the Gas Tungsten Arc Welding (TIG) process on steel and aluminum. short circuit transfer mode.

PREREQUISITES
WLD 122

TEXTBOOK GUIDELINES
Text and materials as decided by welding faculty. (Example: *Gas Tungsten Arc Welding Handbook* by William Minnick)

COURSE LEARNING OUTCOMES
Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills.

1. Set up and preform Gas Tungsten Arc Welding on steel and aluminum..

INSTITUTIONAL OUTCOMES

COURSE CONTENT OUTLINE
The student will demonstrate competence in:
STEEL

1. Perform safety inspection of equipment and accessories
2. Make minor repairs to equipment and accessories; properly assemble torch; sharpen tungsten properly.
3. Set up on Gas Tungsten Arc Welding operation for plain carbon steel
4. Flat Position: Make a stringer bead without filler metal on 16 gage carbon steel passing visual inspection(VI)
5. Flat Position: Make a stringer bead with filler metal on 16 Ga. And 11 Ga. Carbon steel passing visual inspection
6. Flat Position: Make lap weld with out filler on 16 Ga. And 11 Ga. carbon steel passing visual inspection.
7. Flat Position: Make lap weld with filler on 16 Ga. And 11 Ga. carbon steel passing visual inspection.
8. Flat Position: Make an outside corner joint fillet weld without filler on 16 Ga. And 11 Ga. carbon steel passing visual inspection.
9. Flat Position: Make an outside corner joint fillet weld with filler metal on 16 Ga. And 11 Ga. carbon steel passing visual inspection.

10. 2F position: Make fillet weld with filler metal on 16 Ga. And 11 Ga. carbon steel passing visual inspection. And passing a fillet break test on 11 Ga. Or 3/16”
11. 1G Position : Make a CJP square groove weld on 16 Ga. And 11 Ga. carbon steel With filler metal pulsed and not pulsed passing visual inspection.
12. 1G Position : Make a CJP open root groove weld on a square butt joint on 11 Ga. carbon steel .(Alternate: 3/16” carbon steel 60o single V groove open root) with filler metal passing visual inspection. And bend test (BT) Note: This joint can be welded with a backing. If welded with a backing use a 45o single V groove set up.
13. 2G Position : Make a CJP open root groove weld on a square butt joint on 11 Ga. carbon steel.(Alternate: 3/16” carbon steel 60o single V groove open root) with filler metal passing visual inspection. And bend test (BT) Note: This joint can be welded with a backing. If welded with a backing use a 45o single V groove set up.
14. 3F position: Make fillet weld with filler metal on 16 Ga. And 11 Ga. carbon steel passing visual inspection. And passing a fillet break test on 11 Ga. Or 3/16”
15. 3G Position : Make a CJP open root groove weld on a square butt joint on 11 Ga.(Alternate: 3/16”carbon steel 60o single V groove open root) with filler metal passing visual inspection and bend test (BT) Note: This joint can be welded with a backing. If welded with a backing use a 45o single V groove set up.
16. 4F position: Make fillet weld with filler metal on 16 Ga. And 11 Ga. carbon steel passing visual inspection. And passing a fillet break test on 11 Ga. Or 3/16”
17. 4G Position : Make a CJP open root groove weld on a square butt joint on 11 Ga. carbon steel (Alternate: 3/16” carbon steel 60o single V groove open root) with filler metal passing visual inspection. And bend test (BT) Note: This joint can be welded with a backing. If welded with a backing use a 45o single V groove set up.
18. Successfully complete a 1G Carbon Steel WABO and/or AWS
    Detail:
19. Successfully complete a 2G Carbon Steel WABO and/or AWS
    Detail:
20. Successfully complete a 3G Carbon Steel WABO and/or AWS
    Detail:

WELD 132 GTAW Aluminum

1. Perform safety inspection of equipment and accessories
2. Make minor repairs to equipment and accessories; properly assemble torch; sharpen tungsten properly.
3. Set up on Gas Tungsten Arc Welding operation for Aluminum
4. Flat Position: Make a stringer bead without filler metal on 16 gage Aluminum passing visual inspection(VI)
5. Flat Position: Make a stringer bead with filler metal on 16 Ga. And 11 Ga. Aluminum passing visual inspection
6. Flat Position: Make lap weld with out filler on 16 Ga. And 11 Ga. Aluminum passing visual inspection.
7. Flat Position: Make lap weld with filler on 16 Ga. And 11 Ga. Aluminum passing visual inspection.
8. Flat Position: Make an outside corner joint fillet weld without filler on 16 Ga. And 11 Ga. Aluminum passing visual inspection.
9. Flat Position: Make an outside corner joint fillet weld with filler metal on 16 Ga. And 11 Ga. Aluminum passing visual inspection.
10. 2F position: Make fillet weld with filler metal on 16 Ga. And 11 Ga. Aluminum visual inspection. And passing a fillet break test on 11 Ga. Or 3/16”
11. 1G Position : Make a CJP square groove weld on 16 Ga. And 11 Ga. Aluminum With filler metal pulsed and not pulsed passing visual inspection.
12. 1G Position : Make a CJP open root groove weld on a square butt joint on 11 Ga. Aluminum.(Alternate: 3/16” Aluminum 60o single V groove) with filler metal passing visual inspection. And bend test (BT) Note: This joint can be welded with a backing. If welded with a backing use a 45o single V groove set up.
13. 2G Position : Make a CJP open root groove weld on a square butt joint on 11 Ga. Aluminum.(Alternate: 3/16” Aluminum 60o single V groove open root) with filler metal passing visual inspection. And bend test (BT) Note: This joint can be welded with a backing. If welded with a backing use a 45o single V groove set up.
14. 3F position: Make fillet weld with filler metal on 16 Ga. And 11 Ga. Aluminum passing visual inspection. And passing a fillet break test on 11 Ga. Or 3/16”

15. 3G Position : Make a CJP open root groove weld on a square butt joint on 11 Ga. Aluminum (Alternate: 3/16" Aluminum 60o single V groove open root) with filler metal passing visual inspection and bend test (BT) Note: This joint can be welded with a backing. If welded with a backing use a 45o single V groove set up.
16. 4F position: Make fillet weld with filler metal on 16 Ga. And 11 Ga. Aluminum passing visual inspection. And passing a fillet break test on 11 Ga. Or 3/16"
17. 4G Position : Make a CJP open root groove weld on a square butt joint on 11 Ga Aluminum (Alternate: 3/16" Aluminum 60o single V groove open root) with filler metal passing visual inspection. And bend test (BT) Note: This joint can be welded with a backing. If welded with a backing use a 45o single V groove set up

DEPARTMENTAL GUIDELINES *(optional)*

Grades will be calculated as follows:
50% Based on completing all course competencies.
50% Based on Lab Participation, Cleanup on a daily basis, and following ALL Safety rules.

The grade awarded for the class is as follows:

95-100	4.0	86	3.1	77	2.2	68	1.3
94	3.9	85	3.0	76	2.1	67	1.2
93	3.8	84	2.9	75	2.0	66	1.1
92	3.7	83	2.8	74	1.9	65	1.0
91	3.6	82	2.7	73	1.8	60-64	0.7
90	3.5	81	5.6	72	1.7	0-59	0
89	3.4	80	2.5	71	1.6		
88	3.3	79	2.4	70	1.5		
87	3.2	78	2.3	69	1.4		

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DIVISION CHAIR APPROVAL **DATE**