

Lassen Community College Course Outline

GSS-117 Gas Tungsten Arc Welding for Gunsmiths

1.0 Unit

I. Catalog Description

This course is designed to develop the manipulative skills, technical knowledge and applications of the gas tungsten arc welding (GTAW) process as they relate to firearm repair. Students will apply the gas tungsten arc welding process (GTAW) to selected metal types, joint designs and gun parts.

Does Not Transfer to UC/CSU

50 Hours Lab, 50 Total Hours of Instruction

Scheduled:

II. Coding Information

Repeatability: Take 1 Time

Grading Option: Pass/No Pass Only

Credit Type: Credit - Not Degree Applicable

TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

Safely handle equipment to gas tungsten weld selected joint designs to critical industry standards.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Explain the benefits of GTAW as it pertains to gunsmithing.
2. Identify base metal and prescribe proper fill rod.
3. Demonstrate proper weld beads on various thicknesses of metal.
4. Explain and demonstrate the welding of barrel hoods and firing pin holes.

IV. Course Content

A. Safety precautions

1. Electrical shock
2. Radiation hazards
3. Compressed gases
4. Air contamination
5. Emergency shop procedures

B. GTAW torch setup

1. Torch bodies
2. Collet bodies
3. Collet
4. Ceramic cups
5. Tails/caps
6. Tungsten electrodes

C. GTAW power source settings

1. Polarity settings

2. Amperage control
3. Post-flow settings
4. High frequency adjustments
- D. GTAW flowmeter
 1. Shielding gas selection
 2. GTAW flowmeter components
 3. Flowmeter settings
- E. Establishing an ARC
 1. Assembling the GTAW torch
 2. Tungsten electrode extension
 3. Torch angle and distance from workpiece
- F. Weld bead parameters
 1. Bead width
 2. Penetration
 3. Ripple appearance
 4. Travel speed
- G. Selected joint designs - mild steel
 1. Flat - no filler
 2. Flat - filler
 3. Closed butt - flat & vertical
 4. T-joint - flat - bend test
 5. T-joint - vertical
 6. Lap joint - bend test
 7. Edge joints - single & double
 8. Corner joint - bend test
 9. Water tight joint
 10. Air tight joint
- H. Selected joint designs - stainless steel
 1. Flat - no filler
 2. Flat - filler
 3. Closed butt - flat & vertical
 4. T-joint - flat - bend test
 5. T-joint - vertical
 6. Lap joint - bend test
 7. Edge joints - single & double
 8. Corner joint - bend test
 9. Water tight joint
 10. Air tight joint
- I. GTAW projects - may include:
 1. Barrel spinner
 2. Action wrench handles
 3. Firing pin holes
 4. .45 barrel hoods
 5. Screw heads
 6. Bolt handles

V. Assignments

A. Appropriate Readings

The student will be assigned readings from instructor handouts and industry journals.

B. Writing Assignments

The student will be required to keep a journal of notes.

C. Expected Outside Assignments

See 'A' and 'B' above.

D. Specific Assignments that Demonstrate Critical Thinking

Students will be required to demonstrate understanding of course content by demonstrating application of the gas tungsten arc welding (GTAW) process to selected joint designs, metal types and projects which meet industry and shop standards.

VI. Methods of Evaluation

Students will be evaluated on completion of required assignments and class participation.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

Traditional Classroom Delivery Correspondence Delivery

Hybrid Delivery

Online Delivery

Lecture, Laboratory, Demonstration

VIII. Representative Texts and Supplies

Instructor Handouts, Trade Journals

IX. Discipline/s Assignment

Gunsmithing

X. Course Status

Current Status: Active

Original Approval Date: 5/1/1990

Revised By: John Martin

Curriculum/Academic Standards Committee Revision Date: 11/15/2022