Discipline: Agriculture	Sub-discipline: Mechanized Agriculture
General Course Title: **Advanced Agriculture Welding**	Min. Units: **3 Semester**
	Proposed Suffix: **L**

Course Description:
This course involves the development of advanced skill standards in welding. The (GMAW) Gaseous Metal Arc Welding MIG, (GTAW) Gaseous tungsten Arc Welding TIG and (PAC) Plasma Arc Cutting processed are covered as prescribed in the (AMS) American Welding Society Training manual. Laboratory required.

Required Prerequisites or Co-Requisites[1]

Advisories/Recommended Preparation[2]

Course Objectives: *At the conclusion of this course, the student should be able to:*

- Become aware of welding shop safe practices and house keeping skills and perform housekeeping duties
- Follow verbal and written instructions and follow written details to complete assignments
- Perform safety inspections and make minor external repairs to equipment and accessories
- Make fillet and groove welds on mild steel sheet metal in the flat, vertical overhead and horizontal positions with the MIG and TIG process
- Make fillet welds on mild steel plate in the flat and vertical positions using the spray transfer process
- Make fillet welds on mild steel plate in the flat and vertical position
- Make fillet and groove welds on aluminum in flat, vertical and horizontal positions using the TIG process
- Make fillet and groove welds on stainless steel in flat, vertical and horizontal positions using the TIG process
- Set up a plasma cutter and perform the cutting process on mild steel, aluminum and stainless steel.
- Demonstrate ability to communicate and work cooperatively with others

Course Content:

1. Introduction to the GMAW Welding (MIG) welding process
   a. Performing safety inspections of equipment and accessories
   b. Making minor external repairs to equipment and accessory
   c. Setting up for GMAW operations on mild steel
   d. Operating GMAW equipment

2. GMAW (MIG) welding sheet metal fillet weld in flat, vertical and horizontal position
   a. Butt weld
   b. Tee weld
   c. Lap weld
   d. Pipe to plate

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[1] Prerequisite or co-requisite course need to be validated at the CCC level in accordance with Title 5 regulations; co-requisites for CCCs are the linked courses that must be taken at the same time as the primary or target course.

[2] Advisories or recommended preparation will not require validation but are recommendations to be considered by the student prior to enrolling.

3. GMAW (MIG) welding on plate mild steel. Fillet weldi in flat, vertical and horizontal position
   a. Butt weld
   b. Tee weld
   c. Lap weld
   d. Pipe to plate

4. Introduction to the GTAW Welding (TIG) welding process
   a. Performing safety inspections of equipment and accessories
   b. Making minor external repairs to equipment and accessories
   c. Setting up for GTAW operations on Mild steel, Aluminum, and Stainless Steel
   d. Operating GTAW equipment

5. GTMA (TIG) welding mild steel sheet metal fillet weld in flat, vertical and horizontal position
   a. Butt weld
   b. Tee weld
   c. Lap weld

6. GTAW (TIG) welding on plate mild steel. Fillet weld in flat, vertical and horizontal position
   a. Butt weld
   b. Tee weld
   c. Lap weld

7. GTMA (TIG) welding Aluminum sheet metal fillet weld in flat, vertical and horizontal position
   a. Butt weld
   b. Tee weld
   c. Lap weld

8. GTMA (TIG) welding Stainless Steel sheet metal fillet weld in flat, vertical and horizontal position
   a. Butt weld
   b. Tee weld
   c. Lap weld

9. Spray transfer
   a. Make flat and vertical welds on mild steel
   b. Make pile to plate welds on plain mild steel

10. Flux core transfer
   a. Perform safety inspections of equipment and accessories
   b. Make minor external repairs to equipment and accessories
   c. Operate flux cored arc welding equipment
   d. Make fillet welds, all positions, on mild steel
   e. Make groove welds, all positions, on mild steel

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11. Plasma arc cutting
   a. Perform safety inspection of equipment and accessories

b. Make minor external repairs to equipment and accessories

c. Set up for manual plasma arc cutting operations on mild steel, aluminum and stainless steel

Laboratory Activities: Individual Laboratory Activities are designed to support course objectives.

Methods of Evaluation: Lecture	Methods of Evaluation: Laboratory
Comprehensive Quizzes and Exams Written Critical Thinking Scenarios Problem Analysis and Solution Research and Term Papers	Laboratory Skill Validation by Observation Laboratory Reports Diagnostics and Problem Solving Laboratory Skill Practicum Certification Exams

Typical Textbooks, Manuals, or Other Support Materials

Welding Principles and Applications, Jeffers

Statewide Articulation: UCD-ABT 52, other universities as lower division elective

FDRG Lead Signature: Date:

Mark E. Bender, PhD CSU Stanislaus

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