

Discipline: Agriculture	Sub-discipline: Mechanized Agriculture
General Course Title: <b>Equipment Fabrication</b>	Min. Units: <b>3 Semester</b>
Proposed Suffix: <b>L</b>	
<p>Course Description:  This course involves the design and fabrication of agricultural and industrial equipment. Students will design equipment, select materials, estimate costs and fabricate a project. Laboratory required.</p>	
Required Prerequisites or Co-Requisites <sup>1</sup>	
Advisories/Recommended Preparation <sup>2</sup>	
<p>Course Objectives: <i>At the conclusion of this course, the student should be able to:</i></p> <ul style="list-style-type: none"> <li>• Identify and safely use hand and power tools related to equipment fabrication</li> <li>• Design equipment to include drawing, materials list, and time line</li> <li>• Develop the basic ideas, characteristics, functions and elements of weld design to fabrication equipment</li> <li>• Learning to use fabrication aids, jigs and fixtures</li> <li>• Prepare and apply appropriate paints/finishes</li> <li>• Examine commercially constructed equipment and suggest improvements to the performance and efficiency of operation</li> <li>• Demonstrate ability to communicate and work cooperatively with others</li> </ul>	
<p>Course Content:</p> <ol style="list-style-type: none"> <li>1. Introduction to fabrication <ol style="list-style-type: none"> <li>a. Equipment and personal safety</li> <li>b. Hand and power tool usage</li> </ol> </li> <li>2. Drawing and sketching <ol style="list-style-type: none"> <li>a. Symbols</li> <li>b. Free hand sketches</li> <li>c. Three view drawing</li> <li>d. Blue prints</li> </ol> </li> <li>3. Basic fundamentals of weld design <ol style="list-style-type: none"> <li>a. Joint design</li> <li>b. Allowable unit stresses in welds</li> <li>c. joining standard rolled shapes</li> <li>d. Design of joints using dissimilar metals, shapes and sizes</li> <li>e. Accounting for distortion</li> </ol> </li> <li>4. Metal construction and materials <ol style="list-style-type: none"> <li>a. Mild steel</li> <li>b. Cast iron</li> <li>c. Aluminum</li> <li>d. Stainless steel</li> <li>e. Alloy steels</li> </ol> </li> </ol> <p><b>Equipment Fabrication (Content Continued)</b></p>	

<sup>1</sup> 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.

<sup>2</sup> Advisories or recommended preparation will not require validation but are recommendations to be considered by the student prior to enrolling.

- 5. Fabrication procedures and principles
  - a. Welding sheet metal
  - b. Welding heavy material
  - c. Flat weld position
  - d. Out of position welding
  - e. Selection of welding rod and temperature
  - f. Welding preparation
  
- 6. Jigs and fixtures
  - a. Make up of jigs and fixtures for weld fabrication
  - b. Use of jigs and fixtures during weld operation
  
- 7. Project construction
  - a. Cutting of material to size
  - b. Squaring/set up of material
  - c. Appropriate welding procedures
  - d. Painting and finishing for quality appearance
  - e. Record actual material costs

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

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

Typical Textbooks, Manuals, or Other Support Materials  
Welding, John Deere

**Statewide Articulation: CPSLO-CRSC 344, UCD-ABT 52, other universities as lower division elective**

FDRG Lead Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Mark E. Bender, PhD CSU Stanislaus

[For Office Use Only]	<b>Internal Tracking Number</b>