

# **Agriculture and Extension Education 250 (330)**

## **Shop Theory and Methods**

Fall 2008

### **Instructor:**

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### **Course Meetings:**

T & R 2:00 p.m. – 4:50 p.m.  
Room 142 Agricultural Sciences Annex

### **Course Objective:**

The objective of the course is to expose the students to a series of lectures and exercises that will improve their ability to teach agricultural mechanics in a classroom and laboratory. The lectures and activities will prepare students in laboratory technology, locating resources and safely managing an agricultural mechanics classroom and laboratory in middle or secondary schools.

### **Expected Learning Outcomes:**

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

- Relate history and ideals of education in agricultural mechanics at middle and secondary school levels.
- Select and effectively use materials and methods for students to learn.
- Prepare lesson plans in the area of agricultural mechanics.
- Effectively manage the classroom and laboratory.
- Maintain student interest in an agriculture mechanics laboratory.
- Create and update Material Safety Data Sheets, and a chemical hygiene plan for a middle or secondary school laboratory.
- Maintain a safe learning environment.

**Required Supplies:**Costs to Students

Students are responsible for providing the following items:

- a. Safety glasses/goggles
- b. Welding Helmet (shade 10 lens)
- c. Welding gloves
- d. Slip joint pliers
- e. Proper clothing (welding/safe)
- f. Leather shoes/boots
- g. Tape measure

**Grading:**

Grades will be based upon the following:

Item	Number	Points	Total Points	Percent
Lesson exercises	3	100	300	60%
Quizzes	10	10	100	20%
Skill development exercises	10	5	50	10%
Final examination	1	50	50	10%
<b>Total Points</b>			<b>500</b>	

**Lesson Exercises:**Classroom lesson

Each student will prepare and teach a lesson inside the classroom dealing with agricultural mechanics (example: Basics of Arc welding, its uses and availability)

Classroom & Laboratory lesson

Each student will prepare and teach 2 lessons inside the classroom followed by the demonstration in the laboratory (example: Sharpening a drill bit, why sharpen bits, skills needed and the benefits followed by a demonstration in the laboratory)

The teaching exercises will be graded on:

Item	Points Possible	Points Earned
<b>Interest Approach</b> <ul style="list-style-type: none"> <li>➤ Used a creative interest approach</li> <li>➤ Created interest (felt need to know) in the topic</li> <li>➤ Interest approach was appropriate length</li> </ul>	10	
<b>Delivery of lesson</b> <ul style="list-style-type: none"> <li>➤ Appropriate technique(s) used</li> <li>➤ Technique(s) used appropriately</li> </ul>	20	
<b>Questioning strategies</b> <ul style="list-style-type: none"> <li>➤ Questions used to stimulate learning</li> <li>➤ Questions used to direct the learning</li> <li>➤ Questions used to evaluate learning</li> </ul>	10	
<b>Preparation</b> <ul style="list-style-type: none"> <li>➤ Student was prepared to teach</li> <li>➤ Needed equipment was setup</li> <li>➤ Lesson plan was used</li> <li>➤ All support materials were available</li> </ul>	10	
<b>Summary/Conclusion</b> <ul style="list-style-type: none"> <li>➤ Lesson was summarized</li> <li>➤ Appropriate procedures were used to determine student comprehension</li> </ul>	8	
<b>Mastery of content</b> <ul style="list-style-type: none"> <li>➤ Student was knowledgeable of subject content</li> <li>➤ Student had mastered all skills involved</li> </ul>	8	
<b>Eye Contact</b> <ul style="list-style-type: none"> <li>➤ Maintained eye contact with students</li> <li>➤ Did not rely on lesson plan/notes</li> <li>➤ Appropriate chalkboard skills</li> </ul>	8	
<b>Speech Qualities:</b> <ul style="list-style-type: none"> <li>➤ Voice quality</li> <li>➤ Enthusiasm</li> <li>➤ Grammar</li> <li>➤ Pronunciation</li> </ul>	8	
<b>Mobility</b> <ul style="list-style-type: none"> <li>➤ Moved throughout the room</li> <li>➤ Supervised student activities</li> </ul>	8	
<b>Overall Impact</b>	10	
	100	

**Quizzes:**

Ten quizzes will be given throughout the semester. The quizzes will be based on assigned readings (handouts), demonstrations, and lectures.

**Skill Development Exercises:**

The students will be required to complete ten skill development exercises on:

1. Drag bead flat weld
2. Weave bead flat weld
3. Butt weld joints
4. Fillet weld joints
5. Vertical Up hill joints
6. Overhead weld joints
7. Steel cutting with the Oxy-acetylene unit
8. Sizing of nails and screws
9. Conditioning of twist drill bits
10. Soldering joints

**The lesson exercises will be graded on the following:**

Quality of product (soundness)	5
Appearance of product (to thick, to thin, straight)	5
Development of psychomotor skills needed to accomplish tasks (effort)	10
Observation of all safety procedures(did the student follow good practices)	5
<b>Total Points</b>	<b>25</b>

**Final examination:**

The final examination will be comprehensive and cover all aspects of the course.

**Grading Assignment:**

**A** = 450 – 500 points

**B** = 400 – 449 points

**C** = 350 – 399 points

**D** = 300 – 349 points

**F** = 0 – 299 points

**Grading Policy:**

No make up exams except by prior arrangement with instructor

Late assignment = no assignment

Exam grading appeals in writing maybe submitted on the day the exam is returned.

**Attendance policy:**

Consistent with WVU guidelines, student absent from regularly scheduled examinations because of authorized University activities will have the opportunity to take them at an alternative time.

Make – up exams for absences due to any other reason will be at the discretion of the instructor.

**Anticipated Schedule:**

Because of limited equipment in the laboratory, the class will be divided into three groups. The following schedule will be observed for the three groups.

<b>Date</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 3</b>
8/19/2008	Orientation Demonstrations Shop Safety Assignments	Orientation Demonstrations Shop Safety Assignments	Orientation Demonstrations Shop Safety Assignments
8/21/2008	Quiz #1- Safety Safety Demonstrations	Quiz #1- Safety Safety Demonstrations	Quiz #1- Safety Safety Demonstrations
8/26/2008	Quiz #2 – Arc Welding Safety Arc Welding Strike arc, run flat beads Weaving Beads Butt welds Fillet welds	Quiz #4 – Oxyacetylene Safety Oxyacetylene Light and adjust torch Bronze beads Bronze butt welds Cutting with torch Melt strips Beads Butt welds	Quiz #6 – Tool Conditioning Safety Tool Conditioning Plane iron/wood chisel Cold chisel Center punch Auger bit Twist drill bit Tin snips/scissors Screwdriver Replace handles (and others)

8/28/2008	<p>Arc Welding  Strike arc, run flat beads  Weaving Beads  Butt welds  Fillet welds</p> <p>Skill Exercise #1 Due</p>	<p>Oxyacetylene  Light and adjust torch  Bronze beads  Bronze butt welds  Cutting with torch  Melt strips  Beads  Butt welds</p> <p>Skill Exercise #1 Due</p>	<p>Quiz #7 – Cold Metal Safety  Cold Metal  Cutting  Tool gage  Threading  Bending</p> <p>Skill Exercise #1 Due</p>
9/2/2008	<p>Arc Welding  Strike arc, run flat beads  Weaving Beads  Butt welds  Fillet welds</p>	<p>Oxyacetylene  Light and adjust torch  Bronze beads  Bronze butt welds  Cutting with torch  Melt strips  Beads  Butt welds</p>	<p>Quiz #8 – Carpentry Safety  Carpentry and Sheet Metal  Reading Measurements  Nail/Screw Sizes and Uses  Cutting  Attachment  Soldering Exercises  Construction (funnel, dust pan or  feed scoop)</p>
9/4/2008	<p>Arc Welding  Strike arc, run flat beads  Weaving Beads  Butt welds  Fillet welds</p> <p>Skill Exercise #2 Due</p>	<p>Oxyacetylene  Light and adjust torch  Bronze beads  Bronze butt welds  Cutting with torch  Melt strips  Beads  Butt welds</p> <p>Skill Exercise #2 Due</p>	<p>Quiz #9 – Sheet Metal Safety  Carpentry and Sheet Metal  Reading Measurements  Nail/Screw Sizes and Uses  Cutting  Attachment  Soldering Exercises  Construction (funnel, dust pan or  feed scoop)</p> <p>Skill Exercise #2 Due</p>

9/9/2008	<p>Arc Welding  Strike arc, run flat beads  Weaving Beads  Butt welds  Fillet welds  Quiz #3 – Arc Welding Skills</p>	<p>Oxyacetylene  Light and adjust torch  Bronze beads  Bronze butt welds  Cutting with torch  Melt strips  Beads  Butt welds  Quiz #5 – Oxyacetylene Skills</p>	<p>Carpentry and Sheet Metal  Reading Measurements  Nail/Screw Sizes and Uses  Cutting  Attachment  Soldering Exercises  Construction (funnel, dust pan or feed scoop)  Quiz #10 – Tool Conditioning, cold metal, carpentry, &amp; sheet metal skills</p>
9/11/2008	<p>Quiz #4 – Oxyacetylene Safety  Oxyacetylene  Light and adjust torch  Bronze beads  Bronze butt welds  Cutting with torch  Melt strips  Beads  Butt welds    Skill Exercise #3 Due</p>	<p>Quiz #6 – Tool Conditioning Safety  Tool Conditioning  Plane iron/wood chisel  Cold chisel  Center punch  Auger bit  Twist drill bit  Tin snips/scissors  Screwdriver  Replace handles (and others)  Skill Exercise #3 Due</p>	<p>Quiz #2 – Arc Welding Safety  Arc Welding  Strike arc, run flat beads  Weaving Beads  Butt welds  Fillet welds    Skill Exercise #3 Due</p>
9/16/2008	<p>Oxyacetylene  Light and adjust torch  Bronze beads  Bronze butt welds  Cutting with torch  Melt strips  Beads  Butt welds</p>	<p>Quiz #7 – Cold Metal Safety  Cold Metal  Cutting  Tool gage  Threading  Bending</p>	<p>Arc Welding  Strike arc, run flat beads  Weaving Beads  Butt welds  Fillet welds</p>

9/18/2008	<p>Oxyacetylene  Light and adjust torch  Bronze beads  Bronze butt welds  Cutting with torch  Melt strips  Beads  Butt welds</p> <p>Skill Exercise #4 Due</p>	<p>Quiz #8 – Carpentry Safety  Carpentry and Sheet Metal  Reading Measurements  Nail/Screw Sizes and Uses  Cutting  Attachment  Soldering Exercises  Construction (funnel, dust pan or  feed scoop)</p> <p>Skill Exercise #4 Due</p>	<p>Arc Welding  Strike arc, run flat beads  Weaving Beads  Butt welds  Fillet welds</p> <p>Skill Exercise #4 Due</p>
9/23/2008	Career Development Events	Career Development Events	Career Development Events
9/25/2008	Career Development Events	Career Development Events	Career Development Events
9/30/2008	<p>Oxyacetylene  Light and adjust torch  Bronze beads  Bronze butt welds  Cutting with torch  Melt strips  Beads  Butt welds</p>	<p>Quiz #9 – Sheet Metal Safety  Carpentry and Sheet Metal  Reading Measurements  Nail/Screw Sizes and Uses  Cutting  Attachment  Soldering Exercises  Construction (funnel, dust pan or  feed scoop)</p>	<p>Arc Welding  Strike arc, run flat beads  Weaving Beads  Butt welds  Fillet welds</p>
10/2/2008	<p>Oxyacetylene  Light and adjust torch  Bronze beads  Bronze butt welds  Cutting with torch  Melt strips  Beads  Butt welds</p> <p>Quiz #5 – Oxyacetylene Skills</p> <p>Skill Exercise #5 Due</p>	<p>Carpentry and Sheet Metal  Reading Measurements  Nail/Screw Sizes and Uses  Cutting  Attachment  Soldering Exercises  Construction (funnel, dust pan or  feed scoop)</p> <p>Quiz #10 – Tool Conditioning, cold  metal, carpentry, &amp; sheet metal  skills</p> <p>Skill Exercise #5 Due</p>	<p>Arc Welding  Strike arc, run flat beads  Weaving Beads  Butt welds  Fillet welds</p> <p>Quiz #3 – Arc Welding Skills</p> <p>Skill Exercise #5 Due</p>

10/7/2008	<p>Quiz #6 – Tool Conditioning Safety</p> <p>Tool Conditioning</p> <ul style="list-style-type: none"> <li>Plane iron/wood chisel</li> <li>Cold chisel</li> <li>Center punch</li> <li>Auger bit</li> <li>Twist drill bit</li> <li>Tin snips/scissors</li> <li>Screwdriver</li> <li>Replace handles (and others)</li> </ul> <p>Skill Exercise #6 Due</p>	<p>Quiz #2 – Arc Welding Safety</p> <p>Arc Welding</p> <ul style="list-style-type: none"> <li>Strike arc, run flat beads</li> <li>Weaving Beads</li> <li>Butt welds</li> <li>Fillet welds</li> </ul> <p>Skill Exercise #6 Due</p>	<p>Quiz #4 – Oxyacetylene Safety</p> <p>Oxyacetylene</p> <ul style="list-style-type: none"> <li>Light and adjust torch</li> <li>Bronze beads</li> <li>Bronze butt welds</li> <li>Cutting with torch</li> <li>Melt strips</li> <li>Beads</li> <li>Butt welds</li> </ul> <p>Skill Exercise #6 Due</p>
10/9/2008	<p>Quiz #7 – Cold Metal Safety</p> <p>Cold Metal</p> <ul style="list-style-type: none"> <li>Cutting</li> <li>Tool gage</li> <li>Threading</li> <li>Bending</li> </ul> <p>Skill Exercise #7 Due</p>	<p>Arc Welding</p> <ul style="list-style-type: none"> <li>Strike arc, run flat beads</li> <li>Weaving Beads</li> <li>Butt welds</li> <li>Fillet welds</li> </ul> <p>Skill Exercise #7 Due</p>	<p>Oxyacetylene</p> <ul style="list-style-type: none"> <li>Light and adjust torch</li> <li>Bronze beads</li> <li>Bronze butt welds</li> <li>Cutting with torch</li> <li>Melt strips</li> <li>Beads</li> <li>Butt welds</li> </ul> <p>Skill Exercise #7 Due</p>
10/14/2008	<p>Quiz #8 – Carpentry Safety</p> <p>Carpentry and Sheet Metal</p> <ul style="list-style-type: none"> <li>Reading Measurements</li> <li>Nail/Screw Sizes and Uses</li> <li>Cutting</li> <li>Attachment</li> <li>Soldering Exercises</li> <li>Construction (funnel, dust pan or feed scoop)</li> </ul> <p>Skill Exercise #8 Due</p>	<p>Arc Welding</p> <ul style="list-style-type: none"> <li>Strike arc, run flat beads</li> <li>Weaving Beads</li> <li>Butt welds</li> <li>Fillet welds</li> </ul> <p>Skill Exercise #8 Due</p>	<p>Oxyacetylene</p> <ul style="list-style-type: none"> <li>Light and adjust torch</li> <li>Bronze beads</li> <li>Bronze butt welds</li> <li>Cutting with torch</li> <li>Melt strips</li> <li>Beads</li> <li>Butt welds</li> </ul> <p>Skill Exercise #8 Due</p>

10/16/2008	Quiz #9 – Sheet Metal Safety Carpentry and Sheet Metal Reading Measurements Nail/Screw Sizes and Uses Cutting Attachment Soldering Exercises Construction (funnel, dust pan or feed scoop) Skill Exercise #9 Due	Arc Welding Strike arc, run flat beads Weaving Beads Butt welds Fillet welds  Skill Exercise #9 Due	Oxyacetylene Light and adjust torch Bronze beads Bronze butt welds Cutting with torch Melt strips Beads Butt welds  Skill Exercise #9 Due
10/21/2008	Carpentry and Sheet Metal Reading Measurements Nail/Screw Sizes and Uses Cutting Attachment Soldering Exercises Construction (funnel, dust pan or feed scoop) Quiz #10 – Tool Conditioning, cold metal, carpentry, & sheet metal skills Skill Exercise #10 Due	Arc Welding Strike arc, run flat beads Weaving Beads Butt welds Fillet welds Quiz #3 – Arc Welding Skills  Skill Exercise #10 Due	Oxyacetylene Light and adjust torch Bronze beads Bronze butt welds Cutting with torch Melt strips Beads Butt welds Quiz #5 – Oxyacetylene Skills  Skill Exercise #10 Due
10/23/2008	Lesson Plan Development	Lesson Plan Development	Lesson Plan Development
10/28/2008	Classroom Lesson Presentation	Classroom Lesson Presentation	Classroom Lesson Presentation
10/30/2008	Classroom Lesson Presentation	Classroom Lesson Presentation	Classroom Lesson Presentation
11/4/2008	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation
11/6/2008	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation
11/11/2008	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation
11/13/2008	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation

11/18/2008	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation
11/20/2008	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation
11/25/2008	Fall Break	Fall Break	Fall Break
11/27/2008	Fall Break	Fall Break	Fall Break
12/2/2008	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation
12/4/2008	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation	Classroom and laboratory Lesson Presentation
	Final Exam	Final Exam	Final Exam

**NOTE: The instructor reserves the right to alter this syllabus in any way by announcement in a regular class meeting, via email, written notification, or otherwise.**

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If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class. Please make appropriate arrangement with Disability Services (293-6700).”

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