
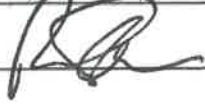


Perris Union High School District

Course of Study

A. COURSE INFORMATION

Course Title: <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Agriculture Welding</div> <input checked="" type="checkbox"/> New <input type="checkbox"/> Revised	Subject Area: <input type="checkbox"/> Social Science <input type="checkbox"/> English <input type="checkbox"/> Mathematics <input type="checkbox"/> Laboratory Science <input type="checkbox"/> World Languages <input type="checkbox"/> Visual or Performing Arts <input checked="" type="checkbox"/> College Prep Elective <input type="checkbox"/> Other	Grade Level <input type="checkbox"/> MS <input type="checkbox"/> HS <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input checked="" type="checkbox"/> 10 <input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12				
If revised previous course name if changed <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	Is this classified as a Career Technical Education course? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Transcript Course Code/Number: <div style="border: 1px solid black; height: 20px; width: 100%;"></div> (To be assigned by Educational Services)	Required for Graduation: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Meets UC/CSU Requirements? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Was this course <i>previously approved by UC for PUHSD?</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Will be verified by Ed Services)	Credential Required to teach this course: <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p style="text-align: center; color: yellow; background-color: black; margin: 5px 0;"><i>To be completed by Human Resources only.</i></p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; border: none;">Signature</td> <td style="text-align: center; border: none;">Date</td> </tr> <tr> <td style="text-align: center; border: none;">CaIPADS CODE</td> <td style="text-align: center; border: none;">7120</td> </tr> </table>		Signature	Date	CaIPADS CODE	7120
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CaIPADS CODE	7120					
Meets "AP" Requirements? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Meets "Honors" Requirements? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Submitted by: Sara Schmitt Site: Perris High School Date: 12/10/22	Unit Value/Length of Course: <input type="checkbox"/> 0.5 (half year or semester equivalent) <input checked="" type="checkbox"/> 1.0 (one year equivalent) <input type="checkbox"/> 2.0 (two year equivalent) <input type="checkbox"/> Other:					
Approvals	Name/Signature	Date				
Director of Curriculum & Instruction	 <small>Julie Zierold (Dec 21, 2022, 13:37 PST)</small>	Dec 21, 2022				
Asst. Superintendent of Educational Services		1-4-2022				
Governing Board						

Prerequisite(s) (REQUIRED):

None

Corequisite(s) (REQUIRED):

None

Brief Course Description (REQUIRED):

The Agriculture Fabrication course integrates mathematics, science, writing and mechanics. Specific units include: Safety and procedures in the Ag Fabrication Shop, Measurement, Project Planning, Plasma and Oxygen/Acetylene Cutting, Oxygen/Acetylene Torch Welding, Gas Metal Arc Welding, Shielded Metal Arc Welding, Careers in Agriculture Fabrication and Mechanics, and a Final Project. Students will focus on understanding theory of the preceding areas, as well as application of these theories.

Students will demonstrate core academic knowledge and critical thinking skills as they apply their knowledge to projects and real life scenarios. A variety of resources will be accessed (Internet, professional journals, books, and industry professionals) for the purpose of creating written and oral presentations that demonstrate students' knowledge and ability. Units covered in this course will build upon existing knowledge where applicable. End of unit projects will incorporate, at minimum, the knowledge acquired from at least one other previously covered unit. For example, students will learn about project planning in Unit 3, then utilize that understanding when they build a small project for their final.

Throughout the course, students will be graded on participation in intra-curricular FFA activities as well as the development and maintenance of an ongoing Supervised Agricultural Experience (SAE) program.

B. COURSE CONTENT

Course Purpose (REQUIRED):

What is the purpose of this course? Please provide a brief description of the goals and expected outcomes. Note: More specificity than a simple recitation of the State Standards is needed.

The primary goal of the Perris High School District Agriculture Department is to provide each student with the opportunity for the best possible education in keeping with the student's interests, abilities, and needs. This opportunity is available as long as the student benefits and does not interfere with the other students' right to receive an education. The Agriculture department recognizes the individual differences that exist amongst students. The Agriculture program is designed and planned to develop vocational talents, worthy attitudes and interests of all students involved. Perris High School will be opening a state of the art Agriculture Mechanics building in Spring of 2023. The main pathway for this developing program will be welding that will include three courses; Agriculture Welding, Agriculture Welding II and Agriculture Welding Fabrication. There is a nationwide shortage of certified welders and because of this, an extreme need for both certified and entry level welders. Program completers will leave with up to three certifications that can be used to procure employment.

Course Outline (REQUIRED):

Detailed description of topics covered. All historical knowledge is expected to be empirically based, give examples. Show examples of how the text is incorporated into the topics covered.

Unit 1 - Safety and Procedures in Ag Fabrication Shop

- Students will learn to recognize major work areas and use safe procedures when working in an agricultural fabrication shop.
- Students will also learn to interpret safety colors and codes, protect the body against injury, and work safely in agricultural fabrication settings.
- Students will become aware of and recognize and reduce hazards in agricultural fabrication settings, and to react effectively in case of fire or other emergencies.

This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test. Information learned in Unit 1 will be utilized throughout the course

Unit 2 - Measurements

- The students will learn how to select and use appropriate measurement and layout tools and procedures for metalworking.

This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test. Concepts and practices learned in Unit 2 will be used throughout this course.

Unit 3 - Project Planning

- The students will learn how to use drawing techniques to create plans for personal projects.
- The students will be able to use and format a bill of materials and to make all calculations needed to develop a bill of materials.
- The student will be able to select and plan projects that develop the metalworking skills needed in agricultural jobs.

This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test. Information obtained through Unit 3 will be utilized throughout this course as students learn theory, and then experience project development and construction.

Unit 4 - Plasma and Oxygen/Acetylene Cutting

- Students will learn how electricity and the combination of oxygen and acetylene gas cuts through metals of varying thicknesses.
- Students will be able to identify the advantages and disadvantages of both cutting techniques as well as which technique to use on different types of metals for the desired outcome.

This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test. Information obtained through Unit 4 will be utilized throughout this course as students learn theory, and then experience project development and construction.

Unit 5: Oxygen/Acetylene Welding

- Students will learn to select oxygen/acetylene tips, equipment, and other materials needed for welding in agricultural fabrication.
- Students will rely heavily upon the knowledge gained from Unit 4 to fully understand the principles of the oxygen/acetylene welding process.
- Students will use oxygen/acetylene welding equipment and procedures in welding and cutting.

This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test.

Unit 6: Shielded Metal Arc Welding

- Students will learn to select electric shield metal arc welders, equipment, and other materials needed for welding in agricultural mechanics. Students will use arc welding equipment and procedures in welding.

This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test. Major areas of instruction include; Selecting and Using Arc Welding Equipment and Arc Welding Mild Steel.

Unit 7: Gas Metal Arc Welding

- Students will learn to select electric gas metal arc welders, equipment, and other materials needed for welding in agricultural mechanics.
- Students will use gas metal arc welding equipment and procedures in welding.

This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test. Major areas of instruction include; Selecting and Using Arc Welding Equipment and Arc Welding Mild Steel.

Unit 8: Careers in Agriculture Fabrication and Mechanics

- Students will explore career opportunities, job applications, job descriptions, qualifications and requirements, education and training, and experience methodologies.

This knowledge will be demonstrated by completion of assignments, experiential learning, and a unit test.

Unit 9: Final Project

- Students will utilize all of the information learned in the preceding units to complete a final project to be taken to our local fair.
- Students must complete full project plans including a bill of materials, to scale drawing, and a list of procedures before building their project.

This project must incorporate at least one type of metal cutting and at least two types of welding. Projects will be graded based on a rubric scale. A cumulative final written exam as well as student skills demonstrations will accompany the project to determine the students' final grades.

Writing Assignments (REQUIRED):

Give examples of the writing assignments and the use of critical analysis within the writing assignments.

1. **Interactive Notebooks-** Students track, annotate, and respond in writing to all materials covered in class. Notebooks facilitate the integration of mathematical and scientific concepts through daily writing, questioning and reflection. Guided notes and complete worksheets will be collected in this resource. Other activities in this notebook could be warm up questions, guided notes, vocabulary, equipment identification, and other unit information. Notebooks also provide a platform for regular review of previous concepts and constructions and for written student-teacher interactions.
2. **Working With a Disability-**This role play activity is meant to help educate students as to the challenges that can come from general shop injuries and to inform them of how easily most shop accidents can be avoided by wearing the appropriate attire and personal protective equipment. To culminate the activity, students will write about how accidents can be avoided by use of Personal Protective Equipment (PPE).
3. **Electrode Identification and Specifications** - Students will make an information sheet in which they identify commonly used electrodes with the correct numbering system. Students must then determine the chemical makeup of the flux coating for each electrode and correlate their findings to the electrode's ability to protect a newly formed bead while it solidifies from a molten to a hardened state.
4. **Let There Be Light** - After experimenting with various arc lengths in the welding booth, students will explain what happens when an arc is being maintained. Students must refer back to the electrical unit and use appropriate terminology in their explanation. This explanation should be included in their classroom notebook.
5. **Career Interest Profile and Reality Check** - Students will use the California Career Zone website to assess their strengths and interests and how those things could correlate to a career. Upon completion of the survey, students will choose up to 4 careers that they were matched with and write a description of that career.
6. **Career Research Paper & Presentation** - Students choose one of the careers selected in the previous project and complete a career plan. Students will first write a career research paper using MLA format. Information in the paper should include industry information, job description, qualifications, education needed, pay range, and projected demand for professionals in their chosen industry. Students will then create a career plan which includes the job description, interests, personal qualifications needed (things they need to know and things they need to know how to do), post-secondary education options, and professional associations. They should use information from www.cacareerzone.org first. And then fill in with information from at least two more sources, one

professional association and one college. Students must cite each source used and the websites must be a .gov, .edu, and .org. Career presentations will be given to the class.

- 7. Creating a Resume and Cover Letter** - Students will create a cover letter and resume detailing the competencies and skills attained while enrolled in the Agricultural Mechanics course. Students will assume to be preparing this information for potential employment at a local fabrication, electrical, plumbing, concrete or power systems company.

INSTRUCTIONAL MATERIALS (REQUIRED)

Textbook #1

Title: Welding: Principles and Applications By Larry Jeffus	Edition: 9th
Author: Larry Jeffus	ISBN: 9780357377659
Publisher: Cengage	Publication Date: 2021
Usage: <input checked="" type="checkbox"/> Primary Text <input type="checkbox"/> Read in entirety or near	

Textbook #2

Title:	Edition:
Author:	ISBN:
Publisher:	Publication Date:
Usage: <input type="checkbox"/> Primary Text <input type="checkbox"/> Read in entirety or near	

Supplemental Instructional Materials *Please include online, and open source resources if any.*

Reusable Resource: Study Guide with Lab Manual ISBN-13: 9780357377697 \$122.75 each
***Reusable Guide for the Instructor to utilize when appropriate for students.**

Estimated costs for classroom materials and supplies (REQUIRED). *Please describe in detail.*
 If more space is needed than what is provided, please attach backup as applicable.

Cost for class set of textbooks: Set of 30 at \$208 each \$6,240	Description of Additional Costs: <ul style="list-style-type: none"> ● Metal Piping, Sheet metal, and other Metal Materials for student projects.
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Additional costs: Material \$4,500 Reusable Lab Manual: \$123	<ul style="list-style-type: none"> • Consumables such as Wire and Filler Metal • Gas such as Oxygen and Acetylene
Total cost per class set of instructional materials:	\$10,863

Key Assignments (REQUIRED):

Please provide a detailed description of the Key Assignments including tests, and quizzes, which should incorporate not only short answers but essay questions also. How do assignments incorporate topics? Include all major assessments that students will be required to complete

Unit 1 - Safety and Procedures in Ag Fabrication Shop Example Assignments

Interactive Notebooks: Safety First - Students begin their notebooks with a section on safety in the shop. Specific tool safety is covered for each tool being introduced. Safety is an ongoing practice throughout the course with specific instruction and reinforcement to complement each unit. Students keep notes and directions regarding shop safety throughout the course. Using Interactive Notebooks, students track, annotate, and respond in writing to all materials covered in class. Notebooks facilitate the integration of mathematical and scientific concepts through daily writing, questioning and reflection. Notebooks also provide a platform for regular review of previous concepts and constructions and for written student-teacher interactions

Working With a Disability - After learning about major shop accidents and typical bodily injury locations, students will complete all class work for the period with a "disability". Students will draw from a can to determine which body part is injured (hand, arm, eyes, leg, etc.). Students will then be given a list of tasks to complete with their injury. This role play activity is meant to help educate students as to the challenges that can come from general shop injuries and to inform them of how easily most shop accidents can be avoided by wearing the appropriate attire and personal protective equipment. To culminate the activity, students will write about how accidents can be avoided by use of Personal Protective Equipment (PPE).

Equipment Check and Awareness of Environment - Four different scenarios will be set-up in the classroom shop. Each scenario will provide a work environment, tools, and project to be done. Students will observe the scene and read the script regarding the project to be completed. Students must determine if all safety materials are present and complete a tool/machine safety check. If items needed are missing from the scene students have to make recommendations about how the scene could be improved. Once complete the students will come up with a protocol to safely and effectively complete the scenarios task. Findings will be shared with the class.

Technical Reading and Safety Precautions/Annotated Reading - Students are given an instruction manual for a piece of shop equipment. Students must read and annotate the instructional manual. Students will then create a "Quick Use" guide for someone who does not want to spend time reading the entire document. Attention must be paid to safety information as well as use. Upon completion of the Quick Use

guide, students will compare their work to the actual Quick Use guide supplied with the equipment.

Unit Assessment: Upon completion of this unit students will take a 100 question safety test. Students must pass the test with a minimum of a 90% to be able to work in the shop. All students that don't pass with a 100% must research each question that they missed, write up each question they missed for study purposes and retake the test. The research and writeup must be accomplished each time a student attempts the test and fails to achieve the 90% threshold.

Unit 2 - Measurements Example Assignments

Interactive Notebooks: Warm up Questions, Guided Notes, Vocabulary, Equipment identification, and other unit information.

Use and Identification - Students will identify measurement and layout tools of the industry as well as their correct usage. Information obtained will be included in their interactive notebooks. Pictures of the tools along with a scenario detailing proper use will also be present.

A Fraction of an Inch - Students learn by teaching. For this assignment, students must make a story book that teaches a K-2 student how to read a ruler. The students' storybooks must show measurement to $1/16$ ". Students must also demonstrate understanding of reducing fractions.

Story books will be presented to an elementary teacher for review and critique as it would relate to an elementary student. This story will be graded based on a rubric format.

What is Scale? - In this activity students will understand that the term "SCALE" has a dual meaning in project design and drawings. Scale refers to the ratio of the linear size of the model to the size of the real object being modeled. A problem based worksheet is also provided to help students understand scale factors and define ratio of a model size relative to the actual object that the model represents. The Teacher will tap into prior knowledge in understanding that models and toys have different scales in relation to the real object being modeled. Students will understand that key parts to every scale drawing are the scale factor and the degree to which scale models has been reduced in size, compared to the original. Students will demonstrate their understanding of scale by completing a table showing real life sizes of various objects (10 items to be provided by teacher, 10 items to be selected by student) and then their scaled size in inches. Students must complete both $1/2$ " and $1/4$ " scale.

Unit Assessment: Students will complete practical measurement assignments and quizzes where they physically measure objects and record their length. Upon completion of this unit students will understand the basics of how to measure and lay out a project that they have designed. Students will become proficient with a tape measure, square, compass, ruler, and other tools involved in the design/layout process.

Unit 3 - Project Planning Example Assignments

Interactive Notebooks: Warm up Questions, Guided Notes, Vocabulary, Equipment identification, and other unit information.

Sketching and Drawing Projects adapted from **Basic Elements of a Straight Line** by Michael Cappetti CTE Online - Technical sketching is a necessary skill used by Architects, Engineers, & Contractors to communicate basic ideas in design and construction project work. This lesson starts with the very elementary practice of drawing straight lines without the aid of a straight edge. As we progress with our straight practice, the lesson will progress into geometric shapes such as triangles and also drawing lines at general angles such as 45 degrees. Proficiency in freehand technical sketching is communicating the idea without the use of words including elements of shading, perspective and detail. If the student sketches a shop welder, does it look like a welder or something other than a welder? Proficiency is communicating! Try to understand that straight line practice in this lesson evolves into basic geometric shapes and then those basic straight line shapes are used to develop circles and arcs.

Example - a square is used to develop a circle. Students will use these basic skills to complete a sketch and scaled drawing of a tool box from their Agricultural Mechanics textbook.

Figuring a Bill of Materials adapted from **Jake Dunn CTE Online** - Students are given 3 project blueprints. Students must then complete a bill of materials for each project. Projects include a hand tool box, end table, and coat rack. Students must correctly list all materials needed to complete each project in their bill of materials. Students will then need to compute the total materials cost for the project. Upon completion of materials cost, students will calculate estimated time needed to complete the project as well as cost of labor to determine an appropriate product cost to a consumer.

Unit Assessment: Students will produce 3 view mechanical or CAD drawings and a bill of materials for all projects constructed.

Unit 4 - Plasma and Oxygen/Acetylene Cutting Example Assignments

Interactive Notebooks: Warm up Questions, Guided Notes, Vocabulary, Equipment identification, and other unit information.

Interactive Notebooks: Cutting Worksheet- Students will complete guided notes on the theory and practice of metal cutting techniques. Students will utilize these notes to compare and contrast plasma and oxygen/acetylene cutting.

Critical Thinking: Cutting Scenarios- Students will be given a variety of scenarios as if they are working in a fabrication shop and have just taken a customer order. They must utilize the information learned in Unit 3 to complete project plans and a bill of materials. They must then determine which cutting technique to use based on the customer's desired outcomes.

Demonstration: Torch Set Up- Students must demonstrate how to properly and safely light an oxygen/acetylene torch and adjust the flame to obtain a neutral flame and then a feathered flame.

Project: Name Plate- Students will be given a piece of steel and must utilize both plasma and oxygen/acetylene cutting techniques to cut a straight edge on three sides and a rounded edge on one side. The students must then cut a square, triangle, and their name into the plate.

Unit Assessment: Students will demonstrate the proper use and setup of a plasma cutting machine. Students will demonstrate how to cut a straight line with a plasma cutter. Students will also learn to use software to set up and control a CNC plasma table.

Unit 5: Oxygen/Acetylene Welding Example Assignments

Interactive Notebooks: Warm up Questions, Guided Notes, Vocabulary, Equipment identification, and other unit information.

Use and Identification - Students will identify tools of the metal and welding industry as well as their correct usage. Information obtained will be included in their interactive notebooks. Pictures of the tools along with a scenario detailing proper use will also be present.

Flame Specifications - Students will make an information sheet in which they identify and draw the proper welding flame, improper flames, and what adjustments to make to correct improper flames. Students must then demonstrate these processes.

Defective Weld Conditions and Their Main Causes - Students will research common defects in welds. Students must then create an interactive chart that describes the weld defect, a visual representation of the defect, and explanation of the defect, a minimum of 3 reasons for the defect, and finally a way that the defect can be corrected in future welds.

Project: Coupon Welding- Students must utilize the information learned in Unit 4 to cut 3 2"x4" metal coupons and perform a tee weld, butt weld, overlap weld, and run a bead using proper oxygen/acetylene welding techniques.

Unit Assessment: Students will complete a series of oxy fuel welds and cuts. Upon completion their welds and cuts will be evaluated by the instructor based on a standard rubric. Students will learn how to identify quality welds and defects in welds.

Unit 6: Shielded Metal Arc Welding Example Assignments

Interactive Notebooks: Warm up Questions, Guided Notes, Vocabulary, Equipment identification, and other unit information.

Electrode Identification and Specifications - Students will make an information sheet in which they identify commonly used electrodes with the correct numbering system. Students must then determine the chemical makeup of the flux coating for each electrode and correlate their findings to the electrode's ability to protect a newly formed bead while it solidifies from a molten to a hardened state.

Let There Be Light - Students will strike and maintain an arc by building up a small boss on each center punch mark on coupon. After experimenting with various arc lengths in the welding booth, students will explain what happens when an arc is being maintained. Students must refer back to the electrical unit and

use appropriate terminology in their explanation. This explanation should be included in their classroom notebook.

Defective Weld Conditions and Their Main Causes - Students will research common defects in welds. Students must then create an interactive chart that describes the weld defect, a visual representation of the defect, and explanation of the defect, a minimum of 3 reasons for the defect, and finally a way that the defect can be corrected in future welds.

Welding beads - Students will learn to manipulate 2 variables of arc welding: arc length, travel angle, or travel speed. Students will run beads using 7014, 6013, 7018 and 6011 welding rod. As students complete beads on weld coupons, they must adjust variables to appropriate and inappropriate values. Students will then evaluate their own and their peers beads. Students must write justifications for why the beads run are either good or bad. Students must address the variables of arc length, travel angle, and travel speed in their written justifications.

Project: Coupon Welding- Students must utilize the information learned and perform multiple welds including tee welds, butt welds, overlap welds, with various welding rods and run the beads using proper shielded metal arc welding techniques.

Unit Assessment: Students will complete a series of SMAW weld joints with 7014, 6013, 7018, and 6011 electrodes. Students will use a rubric to self evaluate and be evaluated by the instructor helping them build their knowledge of criteria necessary for a quality weld joint.

Unit 7: Gas Metal Arc Welding Example Assignments

Interactive Notebooks: Warm up Questions, Guided Notes, Vocabulary, Equipment identification, and other unit information.

Wire Identification and Specifications - Students will make an information sheet in which they identify commonly used wire types. Students must then identify the advantages and disadvantages of each wire type and how to adjust welding techniques and machines set up in order to properly and safely use each type.

Defective Weld Conditions and Their Main Causes - Students will research common defects in welds. Students must then create an interactive chart that describes the weld defect, a visual representation of the defect, an explanation of the defect, a minimum of 3 reasons for the defect, and finally a way that the defect can be corrected in future welds.

Beads and More Beads - Students will learn to manipulate 2 variables of arc welding: arc length, travel angle, or travel speed. Students will run beads using both copper and flux coated wire. As students complete beads on weld coupons, they must adjust variables to appropriate and inappropriate values. Students will then evaluate their own and their peers' beads. Students must write justifications for why the beads run are either good or bad. Students must address the variables of arc length, travel angle, and travel speed in their written justifications.

Project: Coupon Welding- Students must utilize the information learned and perform a tee weld, butt weld, lap weld, and run a bead using proper gas metal welding techniques.

Unit Assessment: Students will complete a series of GMAW short arc and pulse arc welding welds in various joints. Upon completion students and teachers will evaluate their work based on supplied rubric.

Unit 8: Careers in Agriculture Fabrication and Mechanics Example Assignments

Interactive Notebooks: Warm up Questions, Guided Notes, and other unit information.

Career Interest Profile and Reality Check - Students will use the California Career Zone website to assess their strengths and interests and how those things could correlate to a career. Upon completion of the survey, students will choose up to 4 careers that they were matched with and write a description of that career. AT least one career must be in the agriculture industry. Students will also go through the California Reality check in which they determine minimum monetary needs for their desired lifestyle. Students complete a proposed budget that contains information on housing, utilities, food, transportation, clothing, health care, personal needs, entertainment, miscellaneous costs, and savings. Students then compare the average pay of their desired career with the estimated budget to determine if their selected career will allow them to live the lifestyle they would like.

Career Research Paper & Presentation - Students choose one of the careers selected in the previous project and complete a career plan. Students will first write a career research paper using MLA format. Information in the paper should include industry information, job description, qualifications, education needed, pay range, and projected demand for professionals in their chosen industry. Students will then create a career plan which includes the job description, interests, personal qualifications needed (things they need to know and things they need to know how to do), post-secondary education options, and professional associations. They should use information from www.cacareerzone.org first. And then fill in with information from at least two more sources, one professional association and one college. Students must cite each source used and the websites must be a .gov, .edu, and .org. Career presentations will be given to the class.

Creating a Resume and Cover Letter - Students will create a cover letter and resume detailing the competencies and skills attained while enrolled in the Agricultural Mechanics course. Students will assume to be preparing this information for potential employment at a local fabrication, electrical, plumbing, concrete or power systems company.

Unit Assessment: Students will research careers related to the course materials. Students will complete a slide show/ powerpoint presentation about a career and present it to the class.

Unit 9: Final Project

Interactive Notebooks: Warm up Questions, Guided Notes, Final requirements, and other unit information.

Students will utilize all of the information learned in the preceding units to complete a final project to be taken to our local fair.

Unit Assessment: Students must complete full project plans including a bill of materials, to scale drawing, and a list of procedures before building their project. This project must incorporate at least one type of metal cutting and at least two types of welding.

Instructional Methods and/or Strategies (REQUIRED):

Please list specific instructional methods that will be use.

- Project-based Learning
- Direct Instruction
- Lectures
- Reading Assignment
- Video Lessons
- Demonstrations
- Peer / Teacher Evaluations
- Small Group / Collaborative Learning
- Exhibition of Work

Assessment Methods and/or Tools (REQUIRED):

Please list different methods of assessments that will be used.

- Teacher Observation
- Student Demonstration
- Test and Quizzes
- Homework Assignments
- Projects
- Interactive Notebook
- Rubrics
- Essay, writing responses, reflections and reports
- Participation

COURSE PACING GUIDE AND OBJECTIVES (REQUIRED)

Day(s)	Objective	Standard(s)	Chapter(s)	Reference
SM1 Week 1 Week 2 Week 3	<p><u>Unit 1 - Safety and Procedures in Ag Fabrication Shop</u></p> <ul style="list-style-type: none"> Students will learn to recognize major work areas and use safe procedures when working in an agricultural fabrication shop. Students will also learn to interpret safety colors and codes, protect the body against injury, and work safely in agricultural fabrication settings. Students will become aware of and recognize and reduce hazards in agricultural fabrication settings, and to react effectively in case of fire or other emergencies. 	<p>B1.0 Implement personal and group safety practices.</p> <p>B1.1 Practice the rules for personal and group safety while working in an agricultural mechanics environment.</p> <p>B1.2 Integrate accepted shop management procedures and a safe working environment.</p> <p>B9.3 Operate and maintain fabrication tools and equipment safely.</p> <p>B5.2 Demonstrate basic tool-fitting skills.</p>	<p>Chapter 1. Introduction to Welding</p> <p>Chapter 2. Safety in Welding</p>	<p>California Career Technical Education Model Curriculum Standards - Agriculture</p> <p>Welding: Principles and Applications By Larry Jeffus Cengage</p>
Week 4 Week 5 Week 6 Week 7	<p><u>Unit 2 - Measurements</u></p> <ul style="list-style-type: none"> The students will learn how to select and use appropriate measurement and layout tools and procedures for metalworking. 	<p>B5.2 Demonstrate basic tool-fitting skills.</p>	<p>Chapter 20. Shop Math and Weld Cost</p> <p>Chapter 21. Reading Technical Drawings</p>	<p>California Career Technical Education Model Curriculum Standards - Agriculture</p> <p>Welding: Principles and Applications By Larry Jeffus Cengage</p>
Week 8 Week 9 Week 10	<p><u>Unit 3 - Project Planning</u></p> <ul style="list-style-type: none"> The students will learn how to use drawing techniques to create plans for personal projects. The students will be able to use and format a bill of materials and to make all calculations needed to develop a bill of materials. 	<p>B9.4 Design project plans by using mechanical drawing techniques.</p> <p>B5.1 Identify common metals, sizes, and shapes.</p> <p>B5.2 Demonstrate basic</p>	<p>Chapter 20. Shop Math and Weld Cost</p> <p>Chapter 21. Reading Technical Drawings</p> <p>Chapter 22. Welding Joint Design and Welding Symbols</p>	<p>California Career Technical Education Model Curriculum Standards - Agriculture</p> <p>Welding: Principles</p>

	<ul style="list-style-type: none"> The student will be able to select and plan projects that develop the metalworking skills needed in agricultural jobs. 	<p>tool-fitting skills.</p> <p>B5.3 Properly lay out materials for a given project.</p> <p>-B5.4 Demonstrate basic cold metal processes (e.g., shearing, cutting, drilling, threading, bending).</p>	<p>Chapter 23. Fabricating Techniques and Practices</p> <p>Chapter 24. Welding Codes and Standards</p>	<p>and Applications By Larry Jeffus Gengage</p>
<p>Week 11 Week 12 Week 13</p>	<p>Unit 4 - Plasma and Oxygen/Acetylene Cutting</p> <ul style="list-style-type: none"> Students will learn how electricity and the combination of oxygen and acetylene gas cuts through metals of varying thicknesses. Students will be able to identify the advantages and disadvantages of both cutting techniques as well as which technique to use on different types of metals for the desired outcome. 	<p>B7.0 Understand oxy-fuel cutting and welding.</p> <p>B7.1 Explain the role of heat and oxidation in the cutting process.</p> <p>B7.2 Properly set up, adjust, shut down, and maintain an oxy-fuel system.</p> <p>B7.3 Flame-cut metal with an oxy-fuel cutting torch.</p> <p>B7.5 Repair metal objects using a variety of techniques, such as brazing or hard surfacing.</p>	<p>Chapter 7. Flame Cutting</p> <p>Chapter 8. Plasma Arc Cutting</p> <p>Chapter 9. Related Cutting Processes</p>	<p>California Career Technical Education Model Curriculum Standards - Agriculture</p> <p>Welding: Principles and Applications By Larry Jeffus Gengage</p>
<p>Week 14 Week 15 Week 16 Week 17</p>	<p>Unit 5: Oxygen/Acetylene Welding</p> <ul style="list-style-type: none"> Students will learn to select oxygen/acetylene tips, equipment, and other materials needed for welding in agricultural fabrication. Students will rely heavily upon the knowledge gained from Unit 4 to fully understand the principles of the oxygen/acetylene welding process. Students will use oxygen/acetylene welding equipment and procedures in welding and cutting. 	<p>B7.0 Understand oxy-fuel cutting and welding.</p> <p>B7.1 Explain the role of heat and oxidation in the cutting process.</p> <p>B7.2 Properly set up, adjust, shut down, and maintain an oxy-fuel system.</p> <p>B7.4 Fusion-weld mild steel with and without filler rod by using oxy-fuel equipment.</p>	<p>Chapter 31. Oxyacetylene Welding</p> <p>Chapter 32. Brazing, Braze Welding, and Soldering</p>	<p>California Career Technical Education Model Curriculum Standards - Agriculture</p> <p>Welding: Principles and Applications By Larry Jeffus Gengage</p>
<p>SM 2 Week 1 Week 2 Week 3 Week 4</p>	<p>Unit 6: Shielded Metal Arc Welding</p> <ul style="list-style-type: none"> Students will learn to select electric shield metal arc welders, equipment, and other materials needed for welding in agricultural mechanics. Students will use arc welding equipment and procedures in welding. 	<p>B8.0 Understand electric arc welding processes.</p> <p>B8.1 Select, properly adjust, safely employ, and maintain appropriate welding equipment (e.g., gas metal arc welding, shielded metal arc welding, gas tungsten arc welding).</p> <p>B8.2 Read welding</p>	<p>Chapter 3. Shielded Metal Arc Equipment, Setup, and Operation</p> <p>Chapter 4. Shielded Metal Arc Welding of Plate</p> <p>Chapter 5. Shielded Metal Arc Welding of</p>	<p>California Career Technical Education Model Curriculum Standards - Agriculture</p> <p>Welding: Principles</p>

		<p>symbols and plans, select electrodes, fit-up joints, and control heat and distortion.</p> <p>B8.3 Apply gas metal arc welding, shielded metal arc welding, or flux core arc welding processes to fusion-weld mild steel with appropriate welding electrodes and related equipment.</p> <p>B8.4 Weld a variety of joints in various positions.</p>	<p>Pipe</p> <p>Chapter 6. Shielded Metal Arc Welding AWS SENSE Certification</p>	<p>and Applications By Larry Jeffus Cengage</p>
<p>Week 5 Week 6 Week 7 Week 8</p>	<p><u>Unit 7: Gas Metal Arc Welding</u></p> <ul style="list-style-type: none"> • Students will learn to select electric gas metal arc welders, equipment, and other materials needed for welding in agricultural mechanics. • Students will use gas metal arc welding equipment and procedures in welding. 	<p>B8.0 Understand electric arc welding processes.</p> <p>B8.1 Select, properly adjust, safely employ, and maintain appropriate welding equipment (e.g., gas metal arc welding, shielded metal arc welding, gas tungsten arc welding).</p> <p>B8.2 Read welding symbols and plans, select electrodes, fit-up joints, and control heat and distortion.</p> <p>B8.3 Apply gas metal arc welding, shielded metal arc welding, or flux core arc welding processes to fusion-weld mild steel with appropriate welding electrodes and related equipment.</p> <p>B8.4 Weld a variety of joints in various positions.</p>	<p>Chapter 10. Gas Metal Arc Welding Equipment, Setup, and Operation</p> <p>Chapter 11. Gas Metal Arc Welding</p> <p>Chapter 14. Gas Metal Arc and Flux Cored Arc Welding of Pipe</p> <p>Chapter 15. Gas Metal Arc and Flux Cored Arc Welding AWS SENSE Certification</p>	<p>California Career Technical Education Model Curriculum Standards - Agriculture</p> <p>Welding: Principles and Applications By Larry Jeffus Cengage</p>
<p>Week 9 Week 10 Week 11 Week 12</p>	<p><u>Unit 8: Careers in Agriculture Fabrication and Mechanics</u></p> <ul style="list-style-type: none"> • Students will explore career opportunities, job applications, job descriptions, qualifications and requirements, education and training, and experience methodologies. 	<p>3.0 Career Planning and Management Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.</p> <p>3.1 Identify personal interests, aptitudes, information, and skills necessary for informed career decision making.</p> <p>3.2 Evaluate personal character traits, such as trust, respect, and responsibility, and understand the impact they can have on career success.</p> <p>3.3 Explore how information and communication technologies are used in career planning and decision making.</p> <p>3.4</p>		<p>California Career Technical Education Model Curriculum Standards - Agriculture</p>

		<p>Research the scope of career opportunities available and the requirements for education, training, certification, and licensure.</p> <p>3.9 Develop a career plan that reflects career interests, pathways, and postsecondary options</p>		
<p>Week 13 Week 14 Week 15 Week 16 Week 17</p>	<p>Unit 9: Final Project</p> <ul style="list-style-type: none"> Students will utilize all of the information learned in the preceding units to complete a final project to be taken to our local fair. Students must complete full project plans including a bill of materials, to scale drawing, and a list of procedures before building their project. 	<p>B9.2 Operate and maintain various arc welding and cutting systems safely and appropriately.</p> <p>B9.3 Operate and maintain fabrication tools and equipment safely and appropriately.</p> <p>B9.5 Finish a metal project by implementing proper sequencing.</p> <p>B9.6 Manipulate and finish metal by using a variety of tools, machines, and techniques (e.g., lathe, mill, CNC plasma, shears, press break, grinders, and sanders).</p> <p>B9.7 Construct a welding project using any electric welding process, appropriate products, joints, and positions, which will include interpreting a plan, determining proper assembly sequence, developing a bill of materials and cutting list, selecting and acquiring materials, and developing a clear and concise fabrication contract.</p>		<p>California Career Technical Education Model Curriculum Standards - Agriculture</p>

C. HONORS COURSES ONLY

Indicate how much this honors course is different from the standard course.

D. BACKGROUND INFORMATION

Context for course (optional)

History of Course Development (optional)