EL DORADO UNION HIGH SCHOOL DISTRICT
EDUCATIONAL SERVICES

Course of Study Information Page

COURSE TITLE **Agricultural Mechanics Technology**	
DISTRICT COURSE NUMBER **#0700**	4-DIGIT STATE COURSE CODE (COMPLETED BY SILT) **4030**

Rationale:

This is a revision of the current Agricultural Mechanics course (#0702). The modifications are necessary to 1) align the course with current CTE standards (01/2013) for the Agricultural Mechanics Pathway, 2) work within available facilities, and 3) address the changing needs in the agricultural mechanics industry.

Course Description that will be in the Course Directory:

This course will offer students, who have a career interest in the field of agriculture, the opportunity to advance their skills in the area of agricultural mechanics. Students will learn, understand and employ basic skills in the areas of woodworking, electrical systems, plumbing, cold metal processes, concrete, welding technology, and small engines. Application of current safety standards and procedures will be a component of each study unit. Additional areas of study will include career planning and leadership development through participation in FFA. The maintenance of a Supervised Agricultural Experience (SAE) project to develop hands-on skills outside of class will be an integral part of the course.

How Does this Course align with or meet State and District content standards?

This course is aligned with the Agriculture and Natural Resources sector of the Career Technical Education model curriculum standards set by the California State Board of Education in January 2013. Specifically, this course will focus on the agriculture mechanics pathway standards B1.0 - B4.0, B8 - B10.0 as well as basic core standards 1.0- 11.0.

NCLB Core Subjects:

Select up to two that apply:

- ☐ Arts
- ☐ Civics and Government
- ☒ Not Core Subject
- ☐ Economics
- ☐ History
- ☐ English
- ☐ Mathematics
- ☐ Foreign Language
- ☐ Reading / Language Arts
- ☐ Geography
- ☐ Science

CDE CALPADS Course Descriptors:

(See Page 2 for Definitions)

CTE TECH PREP COURSE INDICATORS
- ☐ Tech Prep (32) (Higher Ed)
- ☐ Tech Prep & ROP(33) (Higher Ed)
- ☐ ROP (30)
- ☒ N/A

CTE COURSE CONTENT CODE
- ☐ CTE Introductory (01)
- ☐ CTE Concentrator (02)
- ☐ CTE Completer (03)
- ☒ Voc Subject **Agriculture**
- ☐ N/A

INSTRUCTIONAL LEVEL CODE
- ☐ Remedial (35)
- ☐ Honors UC-Certified (39)
- ☐ Honors Non UC-Certified (34)
- ☐ College (40)
- ☒ N/A

Length of Course: ☒ Year ☐ Semester

Grade Level(s): ☒ 9 ☒ 10 ☒ 11 ☒ 12

Credit:

- ☒ Number of credits: **10**
- ☒ Meets graduation requirements (subject **elective**)
- ☐ Request for UC "a–g" requirements
  CSU/UC requirement _____
- ☐ College Prep

Prerequisites: No prerequisite

Department(s): Agriculture (CTE)

District Sites:	Ponderosa High School
Board of Trustees COS Adoption Date:	5/13/2014
Textbooks / Instructional Materials:	Agricultural Mechanics: Fundamentals and Application, Ray V. Herren, Delmar Cengage Learning Publishing, 2010-6th Edition, 978-1-4354-0097-9
Funding Source:	Agriculture Incentive Grant, CTE, Perkins
Board of Trustees Textbook Adoption Date:	5/13/2014

Definitions

CALPADS	California Longitudinal Pupil Achievement Data System
CTE Technical Prep	A course within a CTE technical career pathway or program that has been articulated with a postsecondary education or through an apprenticeship program of at least 2 years following secondary instruction.
Instructional Level Code	Represents a nonstandard instructional level at which the content of a specific course is either above or below a 'standard' course instructional level. These levels may be identified by the actual level of instruction or identified by equating the course content and level of instruction with a state or nationally recognized advanced course of study, such as IB or AP.
Instructional Level Honors, UC Certified	Includes all AP courses.
Instructional Level Honors, non UC Certified	Requires Board approval.
Instructional Level College	Includes ACE courses. Equivalent to college course and content, but not an AP course. Not related to section, but to course.

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Course Title: Agricultural Mechanics Technology (#0700)

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Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #1 - Tool Use and Maintenance and Shop Safety**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
6.0 Health and Safety - Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Agriculture and Natural Resources sector workplace environment. (Direct alignment with RSTS 9-10, 11-12.4)
6.1 Locate, and adhere to, Material Safety Data Sheet (MSDS) instructions.
6.2 Interpret policies, procedures, and regulations for the workplace environment, including employer and employee responsibilities.
6.3 Use health and safety practices for storing, cleaning, and maintaining tools, equipment, and supplies.
6.4 Practice personal safety when lifting, bending, or moving equipment and supplies.
6.5 Demonstrate how to prevent and respond to work-related accidents or injuries; this includes demonstrating an understanding of ergonomics.
6.6 Maintain a safe and healthful working environment.
6.7 Be informed of laws/acts pertaining to the Occupational Safety and Health Administration (OSHA).
B1.0 Implement personal and group safety practices.
B1.1 Practice the rules for personal and group safety while working in an agricultural mechanics environment.
B1.2 Integrate accepted shop management procedures and a safe working environment.
B1.3 Safely secure loads on a variety of vehicles.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will:
1. Understand the importance of proper cleaning and storage of shop tools, the reporting of hazardous situations, and safe practices to be employed with all tools and machines.
2. Understand the importance of correct and safe use of shop tools and will be able to identify shop tools.
3. Understand and demonstrate proper procedures for tool fitting and sharpening.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Demonstrate the correct handling and storage of tools, equipment and materials
2. Explain and demonstrate the importance of a clean shop/worksite
3. Explain how to recognize a hazardous situation and the appropriate steps to report or rectify the situation
4. Demonstrate the proper use of a fire extinguisher
5. Explain all shop and equipment safety regulations
6. Identify all tools listed in the Ag Mechanics unit on basic hand and power tools and demonstrate the proper and safe use of the tools
7. Explain and demonstrate how to safely use a grinder

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1.Hands on lab will allow students to demonstrate safety procedures, proper handling of tools, equipment and materials. It will afford the instructor the opportunity to observe each student's progress and correct errors timely and ensure student's understand and can apply concepts.
2. Periodically scheduled cleanings will ensure a clean worksite and help monitor student's complaince and understanding
3. Hands on lab will help ensure students understand what constitutes a hazardous situation and the steps necessary to correct and/or report the situation
4. Teacher led discussion, videos, and demonstrations on use of a fire extinguisher
5. Written evaluations and instructor observation on safety practices
6. Daily assignments and labs, safety and tool tests
7. Instructor observation on how to safely use a grinder

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to identify students who are struggling and provide one-on-one instruction.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #2 - Measurements**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B2.2 Measure and lay out lumber, calculating board feet and square feet.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

1. Students will understand and differentiate between U.S. Customary and metric measurement units (in linear, area, and volumetric measurements).
2. Students will learn to measure objects correctly with a ruler, tape measure, framing square, calipers and micrometers.
3. Students will be able to use various methods to determine the mass and volume of regularly and irregularly shaped objects.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

Strategies that will be used to engage students include:
Teacher led discussions, Hands-on Measurement Labs, woodshop project, and plumbing lab

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Hands-on lab will allow students to demonstrate proper measurement techniques and allow the instructor to observe individual student's progress
2. Completion of a woodshop project will demonstrate student skills in various areas including measurement.
3. Teacher led disscussions will allow for student feedback enabling the instructor to identify problem areas

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to identify students who are struggling and provide one-on-one instruction.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #3 - Fasteners**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B2.3 Identify, select, and implement basic fastening systems.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

1. Students will learn about the various fasteners used in power, metal fabrication and structures
2. Students will learn to select the proper fasteners and hardware for specific jobs or for situations encountered in agricultural mechanics projects

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Introduce students to the various types of fasteners used for different types of job applications
2. Provide several different project scenarios to students and ask them to select the proper fasteners and hardware

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Students will identify five samples of each of the various fasteners used in power, metal fabrication, and structures
2. Students will be given project scenarios and asked to select the proper fasteners and hardware

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to identify students who are struggling and provide one-on-one instruction.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #4 - ARC Welding**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B8.0 Understand electric arc welding processes.
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).
B8.2 Read welding symbols and plans, select electrodes, fit-up joints, and control heat and distortion.
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.
B8.4 Weld a variety of joints in various positions.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will:
1. Safely operate electrical welding equipment
2. Change lens and head gear on a helmet.
3. Strike and maintain an arc correctly.
4. Test welds for quality and strength.
5. Identify career opportunities in the welding industry.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Teacher Led Discussion and Safety Test
2. Demonstration
3. Welding Lab and Demonstrations
4. Welding Lab and Demonstrations
5. Guest Speaker, Job Shadow, Career Search

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Safety test
2.. Hands-on welding lab will allow student to demonstrate proficiency in ARC welding in a safe and controlled environment
3. Hands-on lab will allow students to demonstrate how to change lens and head gear on a welding helmut
4. Hands-on lab will allow students to test welds for quality and strength
5. Written assignment on the topic of career opportunities in the welding industry

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to identify students who are struggling and provide one-on-one instruction.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #5 - MIG Welding**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B8.0 Understand electric arc welding processes.
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).
B8.2 Read welding symbols and plans, select electrodes, fit-up joints, and control heat and distortion.
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.
B8.4 Weld a variety of joints in various positions.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will
1. Pass a safety test and demonstrate proper use of MIG welding equipment.
2. Change lens and head gear on a helmet.
3. Strike and maintain an arc correctly.
4. Use the MIG equipment to perform four basic welds correctly other than a bead.
5. Test welds for quality and strength.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Teacher Led Discussion and Safety Test
2. Demonstrations
3. Welding Lab and Demonstrations
4. Welding Lab and Demonstrations

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Safety test
2. Welding lab will allow student to demonstrate proficiency in MIG welding in a safe and controlled environment
3. Welding lab will allow students to demonstrate how to change lens and head gear on a welding helmut
4. WElding lab will allow students to test welds for quality and strength

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to identify students who are struggling and provide one-on-one instruction.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #6 - Metalworking**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B9.0 Assimilate metallurgy principles and fabrication techniques.
B9.1 Define metallurgy principles, including distortion, hardening, tempering, and annealing.
B9.2 Operate and maintain various arc welding and cutting systems safely and appropriately.
B9.3 Operate and maintain fabrication tools and equipment safely and appropriately.
B9.4 Design project plans by using mechanical drawing techniques.
B9.5 Finish a metal project by implementing proper sequencing.
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).
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.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will:
1. Identify ten common metalworking tools by type and use.
2. Identify samples of cast iron, mild steel, and aluminum.
3. Lay out a drawing on metal for project construction.
4. Identify ten common metalworking tools by name, type and use.
5. Make square and circular bends in metal using an anvil or vise.
6. Determine tap drill sizes for specific applications.
7. Use files and saw blades correctly.
8. Cut threads with a tap and die.
9. Layout and drill holes with a twist drill.
10. Operate power tools such as drills and saws after completing appropriate safety tests.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Teacher Led Discussion and Demonstration of common metalworking tools by type, name and use
2. Introduce students to samples of cast iron, mild steel and aluminum through a Tool I.D. Lab
3. Explain and demonstrate how to lay out a drawing on metal for project construction. Reinforce skill through a Tool Box Project
4. Explain and demonstrate how to make square and circular bends in metal using an anvil or vise.(Tool Box Project)
5. Display tap drill sizes and explain how to determine which to use for specific applications.(Bolt Buster Lab)
6. Explain and demonstrate how to use files and saw blades safely and correctly (Tool Box Project)
7. Safety and Tool Identification Test
8. Explain and demonstrate how to cut threads with a tap and die, layout and drill holes with a twist drill, and operate power tools.(Safety test and Bolt Buster Lab)

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Safety and Tool Identification Test
2. Tool I.D. Lab allows students to learn and identify different metals and their properties. The lab allows the instructor to observe student's learning pace and address issues quickly
3. Tool Box Project allows students to practically apply multiple skills in metalworking. Affords instructor the ability to assess level of mastery for each student in several areas
4. Bolt Buster Lab allows students to practice skills and increase proficiency. The lab allows the instructor to observe student's understanding and skill level.

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to provide one-on-one instruction to students who are struggling with the Unit concepts and application.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #7 -Electricity**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B3.0 Demonstrate basic electricity principles and wiring practices commonly used in agriculture.
B3.1 Explain the relationship between voltage, amperage, resistance, and power in single-phase alternating current (AC) circuits.
B3.2 Use proper electrical test equipment for AC and direct current (DC) circuits.
B3.3 Analyze and correct basic circuit problems (e.g., open circuits, short circuits, incorrect grounding).
B3.4 Implement proper basic electrical circuit and wiring techniques using nonmetallic cable and conduit as defined by the National Electric Code (NEC).
B3.5 Interpret basic agricultural electrical plans.
B3.6 Complete an electrical project, including interpreting a plan, following NEC code, selecting materials and components, and completing a circuit

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Student will:
1. Define ampere, watt, volt, and ohm.
2. Understand the difference between electrical flow of 240 volts and 120 volts in wiring.
3. Use appropriate safety measures in electrical wiring.
4. Exhibit safe habits when working around electricity.
5. Select correct fuses and circuit breakers for a given circuit.
6. Select wire sizes for a given circuit.
7. Use approved safety measures in electrical wiring.
8. Make four different splices.
9. Exhibit safe habits when working around electricity.
10. Complete wiring of light and convenience circuits.
11. Trouble shoot electrical circuits in a safe manner.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Teacher led discussion, including definition and demonstration of ampere, watt, volt and ohm
2. Guest speaker/teacher discussion explaining the difference between 240v and 120v wiring
3. Safety explanations,demonstrations and discussions followed by a Safety Test
4. Explain and demonstrate how to select the correct fuses and circuit breakers for a given circuit. Students will perform and electrical panel inspection
5. Electrical Lab will allow students to practice skills and increase understanding and proficiency

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Safety demonstrations and safety test
2. Having students perform an electrical panel inspection demonstrates their understanding of the basic concepts of electricity, types of fuses and circuit breakers, and correct wire sizes for given circuits. Affords instructor the opportunity to correct misinformation and ensure student's understanding of concepts
3. Electrical Lab allows student to practically apply the knowledge and skills learned in this unit of study. The lab gives the instructor the opportunity to observe student's understanding and skill levels

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to provide one-on-one instruction to students who are struggling with the Unit concepts and application.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit # 8 - Plumbing**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B4.0 Select and apply plumbing system practices commonly used in agriculture.
B4.1 Match appropriate basic plumbing fitting skills with a variety of materials, such as copper, polyvinyl chloride (PVC), steel, polyethylene, and acrylonitrile butadiene styrene (ABS).
B4.2 Explain the environmental influences on plumbing and irrigation system choices (e.g., filter systems, water disposal, drip vs. flood).
B4.3 Research and communicate how various plumbing and irrigation systems are used in agriculture.
B4.4 Complete a plumbing project, including interpreting a plan, developing a bill of materi¬als and cutting list, selecting materials, joining, and testing.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

The student will:
1. List five common plumbing tools.
2. List the factors to consider when selecting different types and sizes of pipe.
3. Identify ten common plumbing fittings.
4. Assemble poly vinyl chloride, rigid metallic, and copper pipe and fittings.
5. Measure water pressure, volume, and flow.
6. Learn how to maintain water systems and water quality.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Explain and demonstrate the use of five common plumbing tools
2. Student/Teacher Led Discussion on the different factors involved in selecting different types and sizes of pipe
3. Sprinkler Lab allows students to identify ten common plumbing fittings and their applications
4. Initials Lab allows students to assemble various types of pipes and fittings
5. Explain and demonstrate how to measure water pressure, volume, and flow as well as how to maintain water systems and water quality

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Sprinkler Lab allows students to practice and demonstrate their understanding of unit topics
2. Initials Lab gives students the opportunity to practically apply what they have learned

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to provide one-on-one instruction to students who are struggling with the Unit concepts and application.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #9 - Lumber and Lumber Products**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B2.1 Identify common wood products, lumber types, and sizes.
B2.2 Measure and lay out lumber, calculating board feet and square feet.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will:
1. Demonstrate the safe handling of lumber and related materials.
2. Identify the basic components of the lumber milling process.
3. Calculate common woodworking measurements such as length, width, and board feet.
4. Identify five hardwoods and five softwoods.
5. Explain the advantages and disadvantages of hard and softwoods.
6. Describe the types and uses of plywood.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Explain and demonstrate safe handling of lumber and related materials,followed by student demonstrations
2. Quizes on basic components of lumber milling process and identification of five hardwoods and five soft woods
3. Hands On Lab will cover common woodworking measurements such as length, width, and thickness and how to calculate board feet.
4. Individual student presentation on advantages and disadvantages of hard and soft woods
6. Student led discussion on the types and uses of plywood

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Quizes
2. Student demonstrations on safety validate their understanding of the importance of safety rules and practices
3. Individual student presentations demonstrate student's knowledge
4. Hands-on Lab exhibits student's skill in calculating common woodworking measurements, including board feet

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to provide one-on-one instruction to students who are struggling with the Unit concepts and application.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #10 - Safe Handling of Lumber Materials and Tools**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B2.4 Complete a woodworking project, including interpreting a plan, developing a bill of materials and cutting list, selecting materials, shaping, joining, and finishing.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

The student will:
1. Identify common hand tools in the woodworking field.
2. Demonstrate the proper use of hand tools in the woodshop.
3. Successfully grind and hone a hand tool to be used in the woodshop.
4. Apply safe and proper tool use in a shop setting

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Explain and demonstrate the use of common hand tools used in woodworking
2. Instructor will have student's demonstrate the proper use of hand tools in the woodshop
3. Instructor will have students demonstrate how to hone a hand tool.
4. Individual student project will allow students to practically apply knowledge and skills learned in this unit.

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

Student demonstrations and an Individual Student Project will demonstrate the proficiency level of each student with regards to the safe handling of lumber materials and tools. These types of assessment tools will allow the instructor to quickly identify problem areas and take appropriate steps to ensure a high level of proficiency for all students

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to provide one-on-one instruction to students who are struggling with the Unit concepts and application.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #11 - Woodshop Power Machines and Equipment**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B2.4 Complete a woodworking project, including interpreting a plan, developing a bill of materials and cutting list, selecting materials, shaping, joining, and finishing

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

The student will:
1. Identify three pieces of woodshop machinery.
2. Identify and explain the uses of parts, blades, bits, belts, tooling, jigs, and fixtures.
3. Demonstrate the proper operational procedures for the machinery found in the woodshop.
4. Explain the importance of checking and setting machinery for accuracy.
5. Utilize woodshop machinery to complete a wood project

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Demonstration and Shop Tour to identify woodshop machinery
2. Student Tool Presentation to identify and explain uses of parts, blades, bits, belts, tooling jigs, and fixtures
3. Explain and have students demonstrate proper operational procedures for woodshop machinery
4. Explain and demonstrate importance of checking and setting machinery for accuracy
5. Hands On Lab/Student Project

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

Student demonstrations and an Individual Student Project will demonstrate the proficiency level of each student with regards to the safe use of woodshop power machines and equipment. These types of assessment tools will allow the instructor to quickly identify problem areas and take appropriate steps to ensure a high level of proficiency for all students

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to provide one-on-one instruction to students who are struggling with the Unit concepts and application.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit#12 - Abrasives and Sanding Equipment**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B2.4 Complete a woodworking project, including interpreting a plan, developing a bill of materials and cutting list, selecting materials, shaping, joining, and finishing

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

The student will:
1. Distinguish among the different types of abrasives.
2. Understand the basic terminology used in the study of abrasives and sanding equipment.
3. Identify the processes of surface preparation.
4. Identify five different mediums for abrasives.
5. Demonstrate the effective use of abrasive papers.
6. Explain the use and maintenance of power sanders.
7. Demonstrate the proper safety related to abrasives and sanding equipment.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Explain and demonstrate the different types of abrasives
2. Student presentations will identify basic terminology used in study of abrasives and sanding equipment
3. Explain and demonstrate the processes of surface preparation and the five different mediums for abrasives
4. Finishing Labs will require students to demonstrate the effective use of abrasive papers and the use and maintenance of power sanders
5. Student Safety Demonstrations

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

Student demonstrations, presentations and the Finishing Labs will demonstrate the proficiency level of each student with regards to the safe use of abrasives and sanding equipment. These types of assessment tools will allow the instructor to quickly identify problem areas and take appropriate steps to ensure a high level of proficiency for all students

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to provide one-on-one instruction to students who are struggling with the Unit concepts and application.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #13 - Finishing**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
B2.4 Complete a woodworking project, including interpreting a plan, developing a bill of materials and cutting list, selecting materials, shaping, joining, and finishing.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

The student will:
1. Define surface preparation
2. Describe the process and the importance of surface preparation.
3. Identify five different finishing materials.
4. Explain the application procedures of finishing materials and methods.
5. Explain and demonstrate the safety considerations when storing and applying finishes.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Define and demonstrate surface preparation steps
2. Have students describe the process and importance of surfce preparation
3. Have students identify five different finishing materials
4. Have students explain the application procedures of finishing materials and methods
5. Explain and demonstrate safety considerations when storing and applying finishes

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

Student demonstrations, presentations, Hands-on labs and the Finishing Materials Labs will demonstrate the proficiency level of each student with regards to finishing materials and procedures. These types of assessment tools will allow the instructor to quickly identify problem areas and take appropriate steps to ensure a high level of proficiency for all students.

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. Hands on Labs will allow the teacher the opportunity to provide one-on-one instruction to students who are struggling with the Unit concepts and application.
2. Peer instruction

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #14 - Careers and Agricultural Mechanics Occupations**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
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. (Direct alignment with SLS 11-12.2)
3.3 Explore how information and communication technologies are used in career planning and decision making.
3.4 Research the scope of career opportunities available and the requirements for education, training, certification, and licensure.
3.9 Develop a career plan that reflects career interests, pathways, and postsecondary options.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

The student will:
1. List five careers related to Ag Mechanics.
2. Develop an educational plan to prepare for a career in Ag Mechanics.
3. Interview a professional in the Ag Mechanics industry.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Career Search in Career Center
2. Student Data Sheet/Presentation
3. Interviews and Career Shadow (follow-up written assignment)

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Oral Presentations will demonstrate how thoroughly students researched, available careers and the educational requirements necessary to succeed in their chosen career path.
2. Students will develop a list of approved questions, interview an Ag Mechanics professional, and prepare a written summary of the interview. This assignment will demonstrate the student's understanding of the interview process, listening skills, knowledge of the chosen career path.

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

Divide projects into multiple steps each with a separate due date. Review each step of a student's project to ensure an understanding of the project and expected outcome. This affords the instructor the opportunity to identify problem areas early and implement corrective actions as needed to allow students to successfully complete each project.

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #15 - Record Keeping**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
4.7 Demonstrate the use of appropriate tools and technology used in the Agriculture and Natural Resources sector.
7.1 Recognize how financial management impacts the economy, workforce, and community.
7.2 Explain the importance of accountability and responsibility in fulfilling personal, community, and workplace roles.
10.7 Understand the importance of maintaining and completing the California Agricultural Record Book.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

The student will:
1. Maintain records by completing the following pages in the California Farm Account Book:
Cover, First Page, Business Agreements, Budget Journals, Financial Statement, Income Summary, and Property Pages (if applicable)
2. Maintain accurate shop records.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Students will create and maintain a California FFA Record Book
2. Lab Assignment Sheets, Demonstration of Computerized Service Records

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Instructors will review and grade FFA Record Books at set points during the semester. Suggestions for improvements or missing information will be provided to each student who will be expected to correct the errors or omissions and resubmit the Record Book for review.
2. Regular review of Computerized Service Records to ensure students understand and utilize proper record keeping methods

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

1. The process of reviewing each student's record book and returning it for corrections allows the instructor to identify problems early, affording students the opportunity to learn from and correct mistakes.
2. Regular review of shop records ensures students understand and utilize proper- industry based record keeping methods

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #16 - Interpersonal Leadership Development**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
9.0 Leadership and Teamwork
Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in the Future Farmers of America (FFA) career technical student organization. (Direct alignment with SLS 11-12.1b)

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

The student will:
1. Demonstrate skills and characteristics desirable in effective leaders by participating in leadership training activities associated with the FFA.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

Participation in FFA activities as outlined in the Program of Activities with particular emphasis on those areas related to Ag Mechanics. This activities may include but are not limited to: Job Interview Competition, Proficiency and Degree Applications, Career Development Events, and Prepared Public Speaking.

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

Instructor observation of a student's level of involvement in FFA and application of leadership skill sets inside the classroom and the FFA organization.

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

Instructor encouragement of student's to participate, peer mentorships and instruction.

EDUCATIONAL SERVICES

Department: **Agriculture**

Course Title: **Agricultural Mechanics Technology** Course Number: **#0700**

Unit Title: **Unit #17 - Supervised Agricultural Experience Project (SAEP)**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

California Career Technical Education Model Curriculum Standards, Agriculture and Natural Resources Pathway Standards
10.0 Technical Knowledge and Skills
Apply essential technical knowledge and skills common to all pathways in the Agriculture and Natural Resources sector, following procedures when carrying out experiments or performing technical tasks. (Direct alignment with WS 11-12.6)
10.6 Manage, and actively engage in, a career-related, supervised agricultural experience.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

The student will:
1. Develop a long range SAEP plan.
2. Maintain a Supervised Agricultural Experience Project.
3. Explain the importance of sound business and management decisions
4. Maintain accurate records

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Common Core State Standards.

1. Student Data Sheets
2. California FFA Record Books
3.Teacher/student led discussions

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

1. Instructors will review and grade FFA Record Books at set points during the semester. Suggestions for improvements or missing information will be provided to each student who will be expected to correct the errors or omissions and resubmit the Record Book for review.
2. Regular peer group meetings of students participating in the same type of SAEP for sharing of information and problem solving
3. Instructor follow-up on progress of each student's SAEP

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

The process of reviewing each student's record book and returning it for corrections allows the instructor to identify problems early, affording students the opportunity to learn from and correct mistakes.
Peer Group meetings and Instructor project review assists students in having a successful SAEP