CHINO VALLEY UNIFIED SCHOOL DISTRICT
INSTRUCTIONAL GUIDELINES
AGRICULTURAL MECHANICS I

Course Number	5838
Department	Agriculture
Prerequisite	Successful completion of Introduction to Agriculture and/or teacher approval
Length of Course	Two (2) semesters/One (1) Year
Grade Level	9-12
Credit	5 units per semester/10 total credits - elective
Repeatable	Not repeatable for credit
UC/CSU	Does not meet a-g requirement
Board Approved	December 10, 2009

Description of Course – This course will introduce the student to skills required in the agricultural mechanics field. The course includes proper safety procedures and proper use of tools found in agricultural mechanics. Each student will maintain a Supervised Agriculture Experience Program project in relation to his level of advancement in the school's agriculture program and in line with state curricular guidelines. Students will also be involved in Future Farmers of America (FFA) leadership experiences. This course is aligned with the California State Standards for Agriculture Mechanics.

Rationale for Course – This course provides students with important life skills, allows hands-on exploration in the fields of agriculture science and technology, and prepares individuals for advanced education and/or training at a postsecondary level.

Standard 1 – Students understand the mechanics in the world of agriculture.

1.1 Objective: Determine how mechanical skills, concepts, and principles are used in agriculture and related occupations.

1.1.1 Performance Indicator: Students will define agriculture, agriculture mechanics, occupation, and occupational cluster.

1.1.2 Performance Indicator: Students will describe the role of mechanics and mechanical applications in society.

1.1.3 Performance Indicator: Students will demonstrate knowledge of contributions made by mechanical application to the development of agriculture.

1.1.4 Performance Indicator: Students will name inventors of important agricultural machines.

Standard 2 – Students learn career options in agricultural mechanics.

2.1 Objective: Determine how skills in agricultural mechanics may be used to earn a good living.

2.1.1 Performance Indicator: Students will list the major divisions in the agricultural cluster of occupations.

2.1.2 Performance Indicator: Students will identify occupations in agriculture that require mechanical skills.

2.1.3 Performance Indicator: Students will describe the relationship between mechanical applications and success in certain agricultural occupations.

Standard 3 – Students understand shop orientation and procedures.

3.1 Objective: Recognize major work areas and use safe procedures when working in an agricultural mechanics shop.

3.1.1 Performance Indicator: Students will identify major work areas in an agricultural mechanics shop.

3.1.2 Performance Indicator: Students will state school policies regarding shop procedures and general safety precautions regarding the shop.

3.1.3 Performance Indicator: Students will sign a shop policy and procedures statement with parents and submit to the teacher.

3.1.4 Performance Indicator: Students will safely adjust, maintain, and operate various types of power equipment.

Standard 4 – Students understand personal safety in agricultural mechanics.

4.1 Objective: Interpret safety colors and codes, protect the body against injury, and work safely in agricultural mechanics settings.

4.1.1 Performance Indicator: Students will state how to create a safe place to work.

4.1.2 Performance Indicator: Students will recognize hazards in agricultural mechanics.

4.1.3 Performance Indicator: Students will list the types of parts and areas identified by various safety colors.

4.1.4 Performance Indicator: Students will describe what each safety color means.

Standard 5 – Students understand how to reduce hazards in agricultural mechanics.

5.1 Objective: Recognize and reduce hazard in agricultural mechanics settings, and react effectively in case of fire or other emergencies.

5.1.1 Performance Indicator: Students will state the three conditions necessary for combustion.

5.1.2 Performance Indicator: Students will match appropriate types of fire extinguishers to each class of fire.

5.1.3 Performance Indicator: Students will use a fire extinguisher.

5.1.4 Performance Indicator: Students will interpret labels on hazardous materials.

5.1.5 Performance Indicator: Students will describe appropriate action in case of fire, accident, or other emergency.

Standard 6 – Students learn shop cleanup and organization.

6.1 Objective: Work cooperatively with classmates to clean the shop efficiently and store all tools and materials.

6.1.1 Performance Indicator: Students will use shop cleaning equipment properly.

6.1.2 Performance Indicator: Students will clean benches, machines, and floors.

6.1.3 Performance Indicator: Students will store materials and tools properly.

6.1.4 Performance Indicator: Students will do assigned tasks.

6.1.5 Performance Indicator: Students will work cooperatively with others.

Standard 7 – Students understand hand tools, fasteners, and hardware.

7.1 Objective: Identify and correctly spell hand tools, hardware, and fasteners that are commonly used in agricultural mechanics.

7.1.1 Performance Indicator: Students will describe how tools are classified.

7.1.2 Performance Indicator: Students will name the major tools categories according to use.

7.1.3 Performance Indicator: Students will select screws, nails, and bolts for various uses.

7.1.4 Performance Indicator: Students will select materials for securing a particular load.

7.1.5 Performance Indicator: Students will tie basic knots and hitches.

Standard 8 – Students learn layout tools and procedures.

8.1 Objective: Select and use appropriate layout tools and procedures for wood and metalworking.

8.1.1 Performance Indicator: Students will select and use layout tools correctly and accurately.

8.1.2 Performance Indicator: Students will make and use a pattern.

8.1.3 Performance Indicator: Students will lay out wood and metal for cutting and shaping.

Standard 9 – Students learn small engine maintenance.

9.1 Objective: Maintain and perform minor repairs on small engines.

9.1.1 Performance Indicator: Students will practice appropriate safety precautions.

9.1.2 Performance Indicator: Students will identify the major parts and systems of small engines.

9.1.3 Performance Indicator: Students will describe the general operation of two- and four- cycle engines.

9.1.4 Performance Indicator: Students will conduct recommended maintenance procedures on small engines.

9.1.5 Performance Indicator: Students will solve minor small engine problems.

Standard 10 – Students learn small engine adjustment and repair.

10.1 Objective: Adjust and repair small engines.

10.1.1 Performance Indicator: Students will identify tools for engine repair.

10.1.2 Performance Indicator: Students will replace ignition and carburetor.

10.1.3 Performance Indicator: Students will disassemble and reassemble a small engine.

Standard 11 – Students learn leadership skills.

11.1 Objective: To develop the student's potential for premier leadership, personal growth, and career success.

11.1.1 Performance Indicator: Students will encourage wise management of resources.

11.1.2 Performance Indicator: Students will develop interpersonal skills through team competitions

11.1.3 Performance Indicator: Students will build character and promote citizenship, volunteerism, and patriotism.

11.1.4 Performance Indicator: Students will promote excellence and healthy lifestyles.

Standard 12 – Students learn the art of sharpening tools.

12.1 Objective: Sharpen tools appropriately and correctly.

12.1.1 Performance Indicator: Students will select appropriate procedures for sharpening tools.

12.1.2 Performance Indicator: Students will sharpen chisels, bits, blades, and digging tools.

Standard 13 – Students learn to select, cut, and shape wood.

13.1 Objective: Select wood and use tools and procedures in cutting and shaping wood.

13.1.1 Performance Indicator: Students will name and correctly spell ten species of lumber that may be worked on.

13.1.2 Performance Indicator: Students will select lumber for agricultural projects.

13.1.3 Performance Indicator: Students will determine the most useful hand tools for cutting and shaping wood.

13.1.4 Performance Indicator: Students will cut and shape wood.

Standard 14 – Students learn electrical principles and wiring materials.

14.1 Objective: Use principles of electricity and safety for planning simple wiring systems.

14.1.1 Performance Indicator: Students will describe some basic principles of electricity and magnetism.

14.1.2 Performance Indicator: Students will use safety practices with electricity.

14.1.3 Performance Indicator: Students will describe the relationship among volts, amperes, and watts.

14.1.4 Performance Indicator: Students will design simple wiring systems.

Standard 15 – Students understand cutting, brazing, and welding with oxy-fuels.

15.1 Objective: Use oxygen and selected fuels to cut, braze, and weld steel.

15.1.1 Performance Indicator: Students will state and apply recommended safety practices for common oxy-fuels.

15.1.2 Performance Indicator: Students will select appropriate pressures for using oxygen and common fuel gases.

15.1.3 Performance Indicator: Students will cut steel with oxy-fuels.

15.1.4 Performance Indicator: Students will prepare metal for brazing and welding

15.1.5 Performance Indicator: Students will identify joints commonly used in welding.

15.1.6 Performance Indicator: Students will braze and weld steel with oxy-fuels.

Standard 16 – Students learn record keeping.

16.1 Objective: Understand the principles of good records and maintain a record of the Supervised Agriculture Experience Program project.

16.1.1 Performance Indicator: Students will describe the uses of planning and historical calendars.

16.1.2 Performance Indicator: Students will write a project contract.

16.1.3 Performance Indicator: Students will maintain an ongoing project journal.

Standard 17 – Students learn basic plumbing.

17.1 Objective: Identify plumbing materials and perform basic plumbing procedures.

17.1.1 Performance Indicator: Students will identify plumbing tools.

17.1.2 Performance Indicator: Students will identify and select pipe.

17.1.3 Performance Indicator: Students will identify common pipe fittings.

17.1.4 Performance Indicator: Students will assemble and maintain water systems.

Standard 18 – Students understand drainage and irrigation technology.

18.1 Objective: Select, install, and maintain soil drainage and irrigation systems.

18.1.1 Performance Indicator: Students will describe the elements of a basic drainage system.

18.1.2 Performance Indicator: Students will state the benefits of irrigation.

18.1.3 Performance Indicator: Students will select an irrigation system.

18.1.4 Performance Indicator: Students will use soil moisture sensors.

18.1.5 Performance Indicator: Students will relate cost factors involved with irrigation.

Standard 19 – Students learn the basics of concrete and masonry.

19.1 Objective: Mix and place concrete and use masonry materials.

19.1.1 Performance Indicator: Students will identity tools used for concrete work.

19.1.2 Performance Indicator: Students will select ingredients for mixing concrete.

19.1.3 Performance Indicator: Students will prepare forms for concreting.

19.1.4 Performance Indicator: Students will calculate concrete volume.

19.1.4 Performance Indicator: Students will make, pour, and finish concrete.

19.1.5 Performance Indicator: Students will lay masonry block.

Standard 20 – Students understand the concepts of repairing and reconditioning tools.

20.1 Objective: Restore worn, damaged, or abused tools to good working condition.

20.1.1 Performance Indicator: Students will remove rust from metal tools.

20.1.2 Performance Indicator: Students will repair split and broken wooden handles.

20.1.3 Performance Indicator: Students will reshape screwdriver tips.

20.1.4 Performance Indicator: Students will reshape the heads of driving and driven tools.