Agriculture & Natural Resource Science Standards Grade 12

Agriculture Mechanical Engineering Technology Junior Senior Level Instruction

Agriculture Education
Office of, Career, Technical and Adult Ed.
Nevada Department of Education, Carson City

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AGRICULTURAL AND NATURAL RESOURCES
Program Requirements

Occupations associated with agriculture production, natural resources, processing and distribution of food and fiber are important to the national interests and provide significant employment opportunities. Occupational education and training in agriculture and agri-business are essential to the continued economic health of Nevada and the nation, as it provides the needed competent and trained work force.

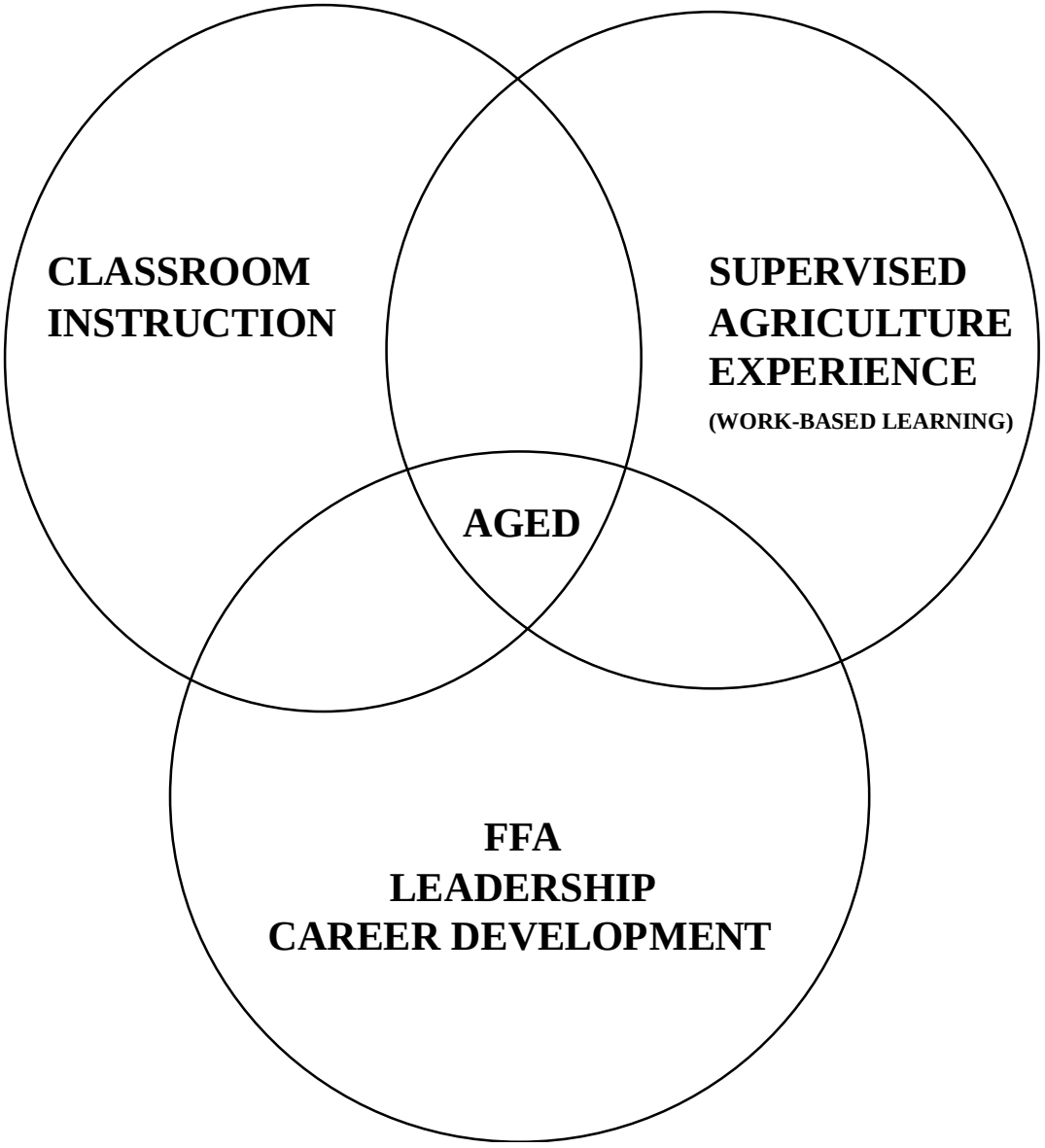
> The advent of corporate agriculture and decline of the family-operated agriculture venture mandate the maintenance, expansion and improvement of occupational agriculture education. Through agriculture education, students are prepared for employment in the field of agriculture through planning and managing agriculture, food, fiber, and natural resources systems. Production of agricultural commodities, including food fiber, wood products, horticultural crops, and other plant and animal products. Financing, processing, and marketing and distribution of agriculture products; farm production and supply and service industries; horticulture and landscaping services, and the use and conservation of land and water resources; development and maintenance of recreational resources. It also includes mining and extraction operations and related environmental management services. Source: *USOE/OVAE Brochure*

Agriculture education provides high school students with technical and specialized knowledge in production agriculture and natural resources as well as other specific agriculture occupations. The programs are designed to meet students' occupational objectives, interests, and abilities for entry into chosen occupations and can prepare them for advanced education and training. Agriculture education is a coordinated program of group and individual instructional activities consisting of classroom instruction, laboratory experiences, and leadership development. Integral to these activities are FFA (leadership development) and Supervised Agriculture Experience (work-based learning), Nevada Revised Statute 385.110. Federal/Public law#105-225which was passed in August, 1998, states "Congress of the United States, recognizes the importance of the FFA as an integral part of the program of Vocational Agriculture." All students enrolled in Agriculture Education will be recognized as members of the FFA organization. All secondary agriculture education programs and school districts will purchase a curriculum packet consisting of the New Horizons agriculture career and technical magazine, the FFA manual, and the Nevada Record Book on a yearly basis for every student enrolled in agriculture education in their program. Areas of study at the secondary level are divided into Agriculture Science and Specialized Advanced Agriculture Career and Technical Areas.

Agriculture and Society, Plant and Soil Science, Agriculture Mechanical Engineering and Technology, Animal Science, Leadership/ FFA, Agriculture Business, Sales, Marketing and Supervised Agriculture Experience, Natural Resources, and Employability are included in the Agriculture Science introduction division.

Instruction in business/specialized agriculture provides training in specific occupational skills, duties, and tasks, as determined by the business and industry needs. Specialized career and technical agriculture programs will include, but are not limited to, the following: ornamental horticulture, floriculture design, turf and landscape management, equine science and technology, forestry technology, wildlife management and enforcement, food science and processing, feedlot management, animal science, veterinary science, agriculture power systems, natural resources and reclamation, mining science and operations, nursery and greenhouse management, landscape architecture, irrigation and chemical management, lawn care and maintenance, and agriculture construction.

NEVADA
AGRICULTURE EDUCATION
Model of Instruction



Content Standard 1.0:Safety: Students will demonstrate and practice general shop safety and those practices specific to the learning activity

Performance Standard 1.1	Students will understand personal/group safety while working in an Agricultural Mechanics environment.
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents ➢ Formulate a safety plan for an agricultural mechanics work site
MEETS STANDARDS	1.1.12.1 Describe personal safety precautions in an agricultural mechanics environment 1.1.12.2 Describe group safety precautions in an agricultural mechanics environment 1.1.12.3 Identify safe and unsafe working conditions in the agricultural mechanics environment 1.1.12.4 Distinguish between the different types of fires 1.1.12.5 Classify the three components of the fire triangle 1.1.12.6 Describe the different types of fire extinguishers 1.1.12.7 Demonstrate appropriate fire extinguisher use 1.1.12.8 Successfully pass (100%) general shop safety test 1.1.12.9 Demonstrate general shop housekeeping procedures that must be maintained
APPROACHES STANDARD	➢ Name several common causes of accidents ➢ Recite the components of a fire triangle ➢ Receive less than 100% on general shop safety test ➢ Recognize the need for safety in an agricultural work environment

Nevada Academic Standards Correlation:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 2.0: Welding: Students will understand the principles and application of welding and cutting and be able to explain the role of heat and the fusion process

Performance Standard 2.1	Students shall practice safety, demonstrate equipment setup and maintenance, appropriate welding and cutting procedures and practice proper tool selection and use of Oxy/fuel welding (OFW).
EXCEEDS STANDARDS	➢ Interpret the letters and numbers used in the AWS code for describing and Oxy/fuel gas welding rod ➢ Identify all safety equipment that should be worn and used when Oxy/fuel gas welding in various positions ➢ Evaluate welds for quality and defects ➢ Test components for gas leaks ➢ Produce quality out of position cuts
MEETS STANDARDS	2.1.12.1 Demonstrate proper safety practices while operating Oxy/fuel welding equipment 2.1.12.2 Successfully pass with (100%) appropriate Oxy/fuel welding safety test 2.1.12.3 Select appropriate welding and cutting tips for specific applications 2.1.12.4 Properly assemble Oxy/fuel apparatus 2.1.12.5 Diagnose equipment failure and notify instructor 2.1.12.6 Perform accepted safe welding and cutting practices 2.1.12.7 Produce 3 weld joints in the flat position 2.1.12.8 Properly cut mild steel
APPROACHES STANDARD	➢ Identify components of Oxy/fuel welding equipment ➢ Set up and select proper Oxy/fuel pressure settings for welding and cutting ➢ Name the three flames used in Oxy/fuel cutting and welding

Nevada Academic Standards Correlation:

Math: 1.0,3.0,4.0,22.0
Science: 1.0,2.0,3.0.4.0,20.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 2.0: Welding: Students will understand the principles and application of welding and cutting and be able to explain the role of heat and the fusion process

Performance Standard 2.2	Students shall practice safety, demonstrate proper equipment setup and maintenance, appropriate welding procedures, and practice proper tool selection while using shielded metal arc welding (SMAW).
EXCEEDS STANDARDS	➢ Evaluate welds for quality and defects ➢ Perform acceptable SMA welds in all positions and on all five basic joints ➢ Select the correct electrode, current and polarity while using SMAW ➢ Successfully pass AWS welding certification exam (3G, 4G, 5G or 6G)
MEETS STANDARDS	2.2.12.1 Demonstrate proper safety practices while operating SMAW equipment 2.2.12.2 Successfully pass with (100%) appropriate SMAW safety test 2.2.12.3 Select appropriate electrodes for specific applications 2.2.12.4 Properly adjust SMAW apparatus 2.2.12.5 Diagnose equipment failure and notify instructor 2.2.12.6 Produce 3 AWS standard welds in the flat and horizontal position 2.2.12.7 Identify welding electrodes using AWS electrode classification system 2.2.12.8 Determine the correct shade of lens used for a given thickness in metal and type of welding process
APPROACHES STANDARD	➢ Demonstrate ability to strike an arc and produce stringer beads ➢ Properly set up an arc welder ➢ List tools needed for arc welding ➢ List 5 basic weld joints ➢ List 4 basic weld positions

Nevada Academic Standards Correlation:

Math: 1.0,3.0,4.0,5.0,22.0
Science: 1.0,2.0,3.0,4.0,20.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 2.0: Welding: Students will understand the principles and application of welding and cutting and be able to explain the role of heat and the fusion process

Performance Standard 2.3	Students shall practice safety, demonstrate proper equipment setup and maintenance, appropriate welding procedures, and practice proper tool selection while using gas metal arc welding (GMAW, FCAW).
EXCEEDS STANDARDS	➢ Evaluate welds for quality and defects ➢ Perform acceptable SMA welds in all positions and on all five basic joints ➢ Select the correct wire speed, voltage and polarity while using GMAW, FCAW ➢ Facilitate successful maintenance of the welder
MEETS STANDARDS	2.3.12.1 Demonstrate proper safety practices while operating GMAW, FCAW equipment 2.3.12.2 Successfully pass with (100%) appropriate GMAW, FCAW safety test 2.3.12.3 Select appropriate electrodes, contact tips, gas nozzles and diffusers, shield gas for specific applications 2.3.12.4 Properly adjust GMAW, FCAW apparatus for specific application 2.3.12.5 Diagnose equipment failure and notify instructor 2.3.12.6 Perform accepted safe welding practices 2.3.12.7 Produce 3 AWS standard welds in the flat and horizontal position
APPROACHES STANDARD	➢ Demonstrate ability to strike an arc and produce stringer beads ➢ Properly set up an welder ➢ List tools needed for welding ➢ List 5 basic weld joints ➢ List 4 basic weld positions

Nevada Academic Standards Correlation:

Math: 1.0,3.0,4.0,22.0
Science: 1.0,3.0,4.0,20.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 2.0: Welding: Students will understand the principles and application of welding and cutting and be able to explain the role of heat and the fusion process

Performance Standard 2.4	Students shall practice safety, demonstrate proper equipment setup and maintenance, appropriate welding procedures, and practice proper tool selection while using gas tungsten arc welding (GTAW).
EXCEEDS STANDARDS	➢ Evaluate welds for quality and defects ➢ Perform acceptable GTA welds in all positions ➢ Select the correct electrode, current and polarity while using GTAW ➢ Successfully pass AWS welding certification exam (3G, 4G, 5G or 6G) ➢ Produce GTAW on non-ferrous metals
MEETS STANDARDS	2.4.12.1 Demonstrate proper safety practices while operating GTAW equipment 2.4.12.2 Successfully pass with (100%) appropriate GTAW safety test 2.4.12.3 Select appropriate consumables and shield gas for specific applications 2.4.12.4 Properly adjust GTAW apparatus for specific application 2.4.12.5 Diagnose equipment failure and notify instructor 2.4.12.6 Perform accepted safe welding practices 2.4.12.7 Produce 3 AWS standard welds in the flat and horizontal position on ferrous metals
APPROACHES STANDARD	➢ Demonstrate ability to strike an arc and produce stringer beads ➢ Properly set up an welder ➢ List tools needed for welding ➢ List 5 basic weld joints ➢ List 4 basic weld positions

Nevada Academic Standards Correlation:

Math: 1.0,3.0,4.0,22.0
Science: 22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 2.0: Welding: Students will understand the principles and application of welding and cutting and be able to explain the role of heat and the fusion process

Performance Standard 2.5	Students shall practice safety, demonstrate proper equipment setup and maintenance, appropriate cutting procedures, and practice proper tool selection while using Air Arc (CAC-A) and Plasma cutting (PAC) procedures.
EXCEEDS STANDARDS	➢ Produce cuts on non-ferrous metals ➢ Perform basic maintenance and repairs as related to the consumable parts
MEETS STANDARDS	2.5.12.1 Demonstrate proper safety practices while operating Air Arc and Plasma cutting equipment 2.5.12.2 Successfully pass with (100%) appropriate Air Arc and Plasma cutting safety test 2.5.12.3 Select appropriate consumables for specific applications 2.5.12.4 Properly assemble Air Arc and Plasma cutting apparatus 2.5.12.5 Diagnose equipment failure and notify instructor 2.5.12.6 Perform accepted safe cutting practices 2.5.12.7 Properly cut ferrous metals
APPROACHES STANDARD	➢ Identify parts of Air Arc and Plasma cutting equipment ➢ Properly attach equipment to air and electric sources

Nevada Academic Standards Correlation:

Math: 1.0,3.0,4.0,22.0
Science: 22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 3.0: Electrical: Students will understand the principles of generation, distribution and application of electricity in agricultural and industrial settings

Performance Standard 3.1	Students will show knowledge of safety practices and use safe practices and procedures during learning activities appropriate to agricultural electrification
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents
MEETS STANDARDS	3.1.12.1 Successfully pass (100%) Agricultural electrification safety test 3.1.12.2 Exercise proper personal safety practices while involved with learning activities in Agricultural electrification 3.1.12.3 Describe proper safety practices applicable to Agricultural electrification
APPROACHES STANDARD	➢ List personal safety practices related to agricultural electrification

Nevada Academic Standards Correlation:

Math: 22.0
Science: 20.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 3.0: Electrical: Students will understand the principles of generation, distribution and application of electricity in agricultural and industrial settings

Performance Standard 3.2	Students will recognize principles and theories of electricity.
EXCEEDS STANDARDS	➢ Interpret and discuss current issues dealing with local and state generation, transmission and distribution of electricity
MEETS STANDARDS	3.2.12.1Describe the principles of generation, transmission and distribution of electricity 3.2.12.2 Explain and express the relationship between voltage current and resistance (Ohm's Law) 3.2.12.3 Differentiate between high and low voltage applications
APPROACHES STANDARD	➢ Compute basic Ohm's Law when given the formula ➢ List components of Ohm's Law Identify uses between high and low voltage applications

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 1.0,3.0,4.0,20.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 3.0: Electrical: Students will understand the principles of generation, distribution and application of electricity in agricultural and industrial settings

Performance Standard 3.3	Students will describe appropriate use and application of electrical conductors and over-current protection.
EXCEEDS STANDARDS	➢ Formulate and explain the conductors, circuit breakers ,over-current protection devices required for specific Agricultural electrification application
MEETS STANDARDS	3.3.12.1 Determine the proper conductor for specific applications 3.3.12.2 Explain the function of circuit breakers and over-current protection devices 3.3.12.3 Explain the function and importance of grounding in electrical circuits
APPROACHES STANDARD	➢ Identify components of electrical systems ➢ Describe a simple electrical circuit

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 1.0,2.0,3.0,4.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 3.0: Electrical: Students will understand the principles of generation, distribution and application of electricity in agricultural and industrial settings

Performance Standard 3.4	Students will recognize standard components of electrical systems
EXCEEDS STANDARDS	Schematically design and construct electrical circuits incorporating both conductive and non-conductive components
MEETS STANDARDS	3.4.12.1 Identify, name and describe the application of non-conductive electrical wiring components 3.4.12.2 Identify, name and describe the application of conductive electrical wiring components
APPROACHES STANDARD	➢ Recognize both conductive and non-conductive electrical components

Nevada Academic Standards Correlation:

Math: 22.0
Science: 1.0,3.0,20.0,22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 3.0: Electrical: Students will understand the principles of generation, distribution and application of electricity in agricultural and industrial settings

Performance Standard 3.5	Students will understand, design and construct electrical circuits
EXCEEDS STANDARDS	➢ Draw and label complex switched and un-switched circuits ➢ Design and build complex switched and un-switched circuits
MEETS STANDARDS	3.5.12.1Draw and label basic switched and un-switched circuits 3.5.12.2 Design and build basic switched and un-switched circuits
APPROACHES STANDARD	➢ Name components of a basic electrical circuit

Nevada Academic Standards Correlation:

Math: 1.0,22.0
Science: 1.0,3.0,20.0,22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 3.0: Electrical: Students will understand the principles of generation, distribution and application of electricity in agricultural and industrial settings

Performance Standard 3.6	Students will demonstrate proficiency in the use of electrical meters & test equipments.
EXCEEDS STANDARDS	➢ Demonstrate proper testing procedures to evaluate system failures
MEETS STANDARDS	3.6.12.1 Properly measure voltage, current, and resistance using a multi-meter
APPROACHES STANDARD	➢ Identifies circuit testing equipment

Nevada Academic Standards Correlation:

Math: 1.0,3.0,22.0
Science: 1.0,3.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 4.0: Agricultural/Industrial Water management: Students will understand principles and applications of water and waste water management as they relate to agricultural and industrial settings

Performance Standard 4.1	Students will know and demonstrate safe practices and procedures associated with agricultural and industrial water management
EXCEEDS STANDARDS	• Interpret and discuss current issues dealing with use, management and conservation of water ➢ Recognize and evaluate potential water safety hazards and act appropriately to prevent accidents ➢ Formulate a water safety plan for an agricultural applications
MEETS STANDARDS	4.1.12.1 Explain the statement that agriculture is the number one user of water 4.1.12.2 Defend the role of water use, management and conservation in the agricultural industry 4.1.12.4 Select and properly use safety equipment appropriate to working conditions
APPROACHES STANDARD	Recognize possible safety hazards with water use • Recognize the importance of water in agriculture

Nevada Academic Standards Correlation:

Math: 22.0
Science: 2.0,13.0,20.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 4.0: Agricultural/Industrial Water management: Students will understand principles and applications of water and waste water management as they relate to agricultural and industrial settings

Performance Standard 4.2	Students will understand the theory and design of various water transfer systems
EXCEEDS STANDARDS	• Design a water transfer distribution and use system to make efficient use of the water available
MEETS STANDARDS	4.2.12.1 Calculate the physical properties of a water transfer system 4.2.12.2 Draw a basic water transfer system 4.2.12.3 Calculate the physical property values within a basic water transfer system 4.2.12.4 Classify water systems based on function, style and type
APPROACHES STANDARD	• List the components of a water transfer system

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 1.0,2.0,13.0,20.0,22.0,23.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 4.0: Agricultural/Industrial Water management: Students will understand principles and applications of water and waste water management as they relate to agricultural and industrial settings

Performance Standard 4.3	Students will understand the application of various components relating to water transfer systems.
EXCEEDS STANDARDS	Justify the selection of various components to be used in appropriate water transfer system
MEETS STANDARDS	4.3.12.2 Classify water pumps by style and type 4.3.12.3 Explain the application of the components needed for selected water transfer systems
APPROACHES STANDARD	Identify the components relating to various water transfer systems by function, style and type

Nevada Academic Standards Correlation:

Math: 1.0,3.0,22.0
Science: 1.0,3.0,13.0,22.0,23.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 5.0: Concrete: Students will understand the principles and applications of concrete as applied to agricultural and industrial construction

Performance Standard 5.1	Students will know and demonstrate safe practices and procedures associated with the use of concrete in agricultural and industrial construction
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents ➢ Formulate a safety plan associated with the use of concrete in agricultural applications
MEETS STANDARDS	5.1.12.1 Use safe practices while building with concrete, including tools and equipment
APPROACHES STANDARD	➢ Describe personal safety practices while building with concrete ➢ Describe safety practices essential to protecting the environment while building with concrete

Nevada Academic Standards Correlation:

Math: 22.0
Science: 20.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 5.0: Concrete: Students will understand the principles and applications of concrete as applied to Agricultural and industrial construction

Performance Standard 5.2	Students will know the components and ratios of various concrete mixtures.
EXCEEDS STANDARDS	• Formulate and justify the appropriate concrete mixture for a given application
MEETS STANDARDS	5.2.12.1 Explain the relationship between coarse and fine aggregates and cement in a concrete mix
APPROACHES STANDARD	➢ List components and ratios of various concrete mixtures

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 2.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 5.0: Concrete: Students will understand the principles and applications of concrete as applied to agricultural and industrial construction

Performance Standard 5.3	Students will demonstrate knowledge of proper concrete applications and construction.
EXCEEDS STANDARDS	➢ Read and interpret plans and drawings to determine bill of materials ➢ Justify the selection of various components to be used in concrete construction ➢ Order appropriate materials for a given project ➢ Layout project from plans ➢ Select and apply appropriate concrete finish based on application
MEETS STANDARDS	5.3.12.1 Calculate the correct volume of concrete required for a specific application 5.3.12.2 Construct forms needed to meet the project requirements 5.3.12.3 Select and apply the materials required to reinforce concrete to meet project requirements 5.3.12.4 Employ appropriate concrete installation procedures 5.3.12.5 Properly prepare site for application of concrete
APPROACHES STANDARD	➢ Identify appropriate tools needed to install and finish concrete ➢ List steps needed to properly prepare site for application of concrete

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,4.0,22.0
Science: 2.0,13.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 6.0: Fencing: Students will understand the agricultural and industrial applications of fencing

Performance Standard 6.1	Students will know and demonstrate safe practices and procedures associated with the construction of agricultural and industrial fences
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents while constructing fences ➢ Formulate a safety plan incorporated into fence construction
MEETS STANDARDS	6.1.12.1 Describe safe practices while using hand and power tools associated with fencing 6.1.12.2 Demonstrate safe practices and procedures while constructing agricultural and industrial fencing
APPROACHES STANDARD	➢ Describe personal safety practices while building fences ➢ Describe safety practices relating to the protection of the environment while building fences

Nevada Academic Standards Correlation:

Math: 22.0
Science: 1.0,3.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 6.0: Fencing: Students will understand the agricultural and industrial applications of fencing

Performance Standard 6.2	Students will describe the application of the various types of fencing systems.
EXCEEDS STANDARDS	• Select and justify the appropriate fencing products needed for a specific application
MEETS STANDARDS	6.2.12.1 Explain the types and functions of various fencing materials available to meet the requirements of the different agricultural and industrial fencing needs
APPROACHES STANDARD	➢ List the components of a basic fencing application ➢ List the various types of agricultural fences

Nevada Academic Standards Correlation:

Math: 22.0
Science: 22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 6.0: Fencing: Students will understand the agricultural and industrial applications of fencing

Performance Standard 6.3	Students will understand the design and installation of various fencing systems.
EXCEEDS STANDARDS	➢ Read and interpret plans and drawings to determine bill of materials ➢ Justify the selection of various components to be used in fence construction ➢ Order appropriate materials for a given project ➢ Layout project from plans
MEETS STANDARDS	6.3.12.1 Create a plan to meet the specific needs of the fencing project 6.3.12.2 Select proper type and quantity of materials needed to complete the fencing project 6.3.12.3 Install the materials to construct the fencing project
APPROACHES STANDARD	➢ Identify appropriate tools needed for fence construction Identify fence materials according to application

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,4.0,22.0
Science: 1.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 7.0: Agricultural industrial Drafting: Students will demonstrate proficiency in agricultural and industrial drafting

Performance Standard 7.1	Students will understand the use of various types of plans.
EXCEEDS STANDARDS	Formulate the appropriate plans required to construct various agriculture projects
MEETS STANDARDS	7.1.12.1 Differentiate between the various plans used in construction projects (blue prints, shop plans and wiring schematics)
APPROACHES STANDARD	Name the various types of plans used in agriculture construction

Nevada Academic Standards Correlation:

Math: 22.0
Science: 22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 7.0: Agricultural industrial Drafting: Students will demonstrate proficiency in agricultural and industrial drafting

Performance Standard 7.2	Students will prepare and use plans appropriate to the learning activity
EXCEEDS STANDARDS	• Explain and defend the use of appropriate plans for the specific application
MEETS STANDARDS	7.2.12.1 Draw appropriate plans for a selected project 7.2.12.2 Develop a bill of materials from a selected set of plans 7.2.12.3 Utilize plans to construct a selected project
APPROACHES STANDARD	• Recognize the importance of plans in project construction

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,4.0,22.0
Science: 22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 8.0: Agricultural industrial buildings: Students will show an understanding of applications of agricultural and industrial buildings

Performance Standard 8.1	Students will know and demonstrate safe practices and procedures associated with the construction of agricultural and industrial buildings
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents while constructing agricultural buildings • Formulate a safety plan incorporated into building construction
MEETS STANDARDS	8.1.12.1Explain safety procedures required while working on a building construction site, including personal safety, hand and power tools and equipment 8.1.12.2 Demonstrate appropriate safety behavior at a construction site 8.1.12.3 Employ appropriate safety practices while working on an agricultural or industrial construction site
APPROACHES STANDARD	➢ Describe personal safety practices at the construction site ➢ Describe safety practices relating to the protection of the environment at the construction site

Nevada Academic Standards Correlation:

Math: 22.0
Science: 1.0,3.0,20.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 8.0: Agricultural industrial buildings: Students will show an understanding of applications of agricultural and industrial buildings

Performance Standard 8.2	Students will demonstrate an understanding of different types of structures used in the agricultural industry
EXCEEDS STANDARDS	➢ Select and substantiate different types of agricultural structures (pole, steel, conventional, masonry, alternative) ➢
MEETS STANDARDS	8.2.12.1 Compare and contrast different types of agricultural structures (pole, steel, conventional, masonry, alternative)
APPROACHES STANDARD	➢ List the various types of agricultural buildings ➢ Recognize the different uses of the various types of agricultural buildings

Nevada Academic Standards Correlation:

Math: 1.0,3.0,22.0
Science: 22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 8.0: Agricultural industrial buildings: Students will show an understanding of applications of agricultural and industrial buildings

Performance Standard 8.3	Students will be able to select and design the appropriate building for the specific agricultural application.
EXCEEDS STANDARDS	➢ Justify the selection of the appropriate building as determined by use, environment and budget
MEETS STANDARDS	8.3.12.1 Select appropriate design and materials to meet the building needs while considering building use, environment and budget
APPROACHES STANDARD	• Recognize the different designs and materials used in agricultural building construction

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 8.0: Agricultural industrial buildings: Students will show an understanding of applications of agricultural and industrial buildings

Performance Standard 8.4	Students will demonstrate the necessary skills for maintenance and repair of agricultural structures.
EXCEEDS STANDARDS	• Develop a routine building maintenance and repair plan for a given agricultural structure
MEETS STANDARDS	8.4.12.1 Describe the essential element of a routine building maintenance plan 8.4.12.2 Develop a routine building maintenance and repair schedule for a given agricultural structure 8.4.12.3 Perform routine maintenance needed to maximize building life
APPROACHES STANDARD	• Explain the importance of routine building maintenance • List the essential elements of routine building maintenance

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 1.0,2.0,13.0,20.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 8.0: Agricultural industrial buildings: Students will show an understanding of applications of agricultural and industrial buildings

Performance Standard 8.5	Students will learn to construct a selected agricultural structure
EXCEEDS STANDARDS	➢ Read and interpret plans and drawings to determine bill of materials ➢ Justify the selection of various components to be used in building construction ➢ Order appropriate materials for a given project ➢ Layout project from plans
MEETS STANDARDS	8.5.12.1 Demonstrate the skills needed to construct an agricultural structure utilizing the appropriate performance standards identified in this Agricultural Mechanics and Technology Standards Guide
APPROACHES STANDARD	• Observe and/or explain the skills needed to construct an Agricultural structure

Nevada Academic Standards Correlation:

Math: 22.0
Science: 1.0,3.0,20.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 9.0: Small engine power & equipment: Students will understand principles and applications of small engine power in an agricultural setting

Performance Standard 9.1	Students will know and demonstrate safe practices and procedures associated with the operation, maintenance and repair of small gas engines and equipment
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents • Formulate a safety plan associated with the operations, maintenance and repair of small gas engines and equipment
MEETS STANDARDS	9.1.12.1 Describe personal and environmental safety practices associated with the operation, maintenance and repair of small gas engines and equipment 9.1.12.2 Explain the appropriate and safe use of hand and power tools related to the operation, maintenance and repair of small gas engines and equipment 9.1.12.3 Practice personal, environmental, hand and power tool safety while operating, maintaining and repairing small gas engines
APPROACHES STANDARD	• Recognize potential hazards associated with small engines and equipment

Nevada Academic Standards Correlation:

Math: 22.0
Science: 20.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 9.0: Small engine power & equipment: Students will understand principles and applications of small engine power in an agricultural setting

Performance Standard 9.2	Students will demonstrate a working knowledge of the essential engine operating systems.
EXCEEDS STANDARDS	• Compare and contrast the different types of essential small engine systems
MEETS STANDARDS	9.2.12.1 Classify small gas engines according to ignition, fuel, cooling, lubrication and compression systems 9.2.12.2 Explain functions of ignition, fuel, cooling, lubrication and compression systems and their interrelationships
APPROACHES STANDARD	• Identify the different types of small engine operating systems • Label the components within small gas engines and equipment

Nevada Academic Standards Correlation:

Math: 1.0,3.0,22.0
Science: 1.0,3.0,4.0,20.0,22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 9.0: Agricultural industrial machinery: Students will understand principles and applications of small engine power in an agricultural setting

Performance Standard 9.3	Students will recognize appropriate power attachments and their applications
EXCEEDS STANDARDS	• Select and justify the appropriate small engine attachment for a specific task
MEETS STANDARDS	9.3.12.1 List and describe appropriate uses and applications of small engine attachments in agricultural 9.3.12.2 Explain the various methods of connecting attachments to small engines
APPROACHES STANDARD	• Identify the different power attachments available for use with small engines • Indicate proper use of attachments for small gas engines

Nevada Academic Standards Correlation:

Math: 1.0,3.0,22.0
Science: 1.0,3.0,4.0,20.0,22.0,23.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 9.0: Agricultural industrial machinery: Students will understand principles and applications of small engine power in an agricultural setting

Performance Standard 9.4	Students will demonstrate through performance, a working knowledge of maintenance and repair procedures on small gas engines and their power attachments
EXCEEDS STANDARDS	➢ Diagnose common failures relating to ignition, fuel, cooling, lubrication and compression systems ➢ Repair common failures relating to ignition, fuel, cooling, lubrication and compression systems
MEETS STANDARDS	9.4.12.1 Identify common failures relating to ignition, fuel, cooling, lubrication and compression systems 9.4.12.2 Interpret service manual information for small engine and equipment maintenance and repair 9.4.12.3 Identify common failures involving small engine attachments
APPROACHES STANDARD	• Recognize the need for small engine and equipment maintenance and repair • Review the service manual for maintenance and repair of small engine and equipment

Nevada Academic Standards Correlation:

Math: 22.0
Science: 1.0,3.0,20.0,22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 10.0: Hand & power tools: Students will be able to identify and demonstrate the proper use of hand and power tools as they are used in the agricultural industry

Performance Standard 10.1	Students will identify general shop hand and power tools
EXCEEDS STANDARDS	• Categorize, compare and contrast shop hand and power tools
MEETS STANDARDS	10.1.12.1 Identify and explain the proper use of shop hand tools 10.1.12.2 Identify and explain the proper function of power tools
APPROACHES STANDARD	• Name shop hand tools • Name power tools

Nevada Academic Standards Correlation:

Math: 22.0
Science: 1.0,22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 10.0: Hand & power tools: Students will be able to identify and demonstrate the proper use of hand and power tools as they are used in the agricultural industry

Performance Standard 10.2	Students will show a working knowledge of and demonstrate safe use of hand and power tools
EXCEEDS STANDARDS	• Model the safe and proper use of shop hand tools • Model the safe and proper use of power tools
MEETS STANDARDS	10.2.12.1 Successfully complete safety test (100%) on safe use of hand tools 10.2.12.2 Demonstrate safe use of hand tools 10.2.12.3 Successfully complete safety test (100%) on safe use of power tools 10.2.12.4 Demonstrate safe use of power tools
APPROACHES STANDARD	• Study and observe the safe and appropriate use of hand and power tools

Nevada Academic Standards Correlation:

Math: 22.0
Science: 1.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 10.0: Hand & power tools: Students will be able to identify and demonstrate the proper use of hand and power tools as they are used in the agricultural industry

Performance Standard 10.3	Students will be able to select and use the proper tool for the application
EXCEEDS STANDARDS	➢ Categorize, compare and contrast shop hand and power tools for appropriate application
MEETS STANDARDS	10.3.12.1 Determine the proper tool for the specific application 10.3.12.2 Utilize appropriate tool for the specific application
APPROACHES STANDARD	• Recognize that there are differences among all hand and power tools

Nevada Academic Standards Correlation:

Math: 22.0
Science: 22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 10.0: Hand & power tools: Students will be able to identify and demonstrate the proper use of hand and power tools as they are used in the agricultural industry

Performance Standard 10.4	Students demonstrate appropriate procedures for the maintenance and repair of hand and power tools
EXCEEDS STANDARDS	• Justify the reasoning for maintaining, reconditioning and/or replacing hand and power tools
MEETS STANDARDS	10.4.12.1 Determine if the tool is safe to use in its present condition 10.4.12.2 Determine if a damaged tool can be reconditioned or needs replacement 10.4.12.3 Demonstrate proper care and storage of tools 10.4.12.4 Exercise the skills needed to return a damaged tool to a safe working condition
APPROACHES STANDARD	• Recognize the need for tool maintenance and repair

Nevada Academic Standards Correlation:

Math: 1.0,3.0,22.0
Science: 22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 11.0: Gas & Diesel power: Students will understand the basic principles, operations and maintenance of gas and diesel engines as used in agricultural settings

Performance Standard 11.1	Students will show knowledge of safety practices and procedures appropriate to gas and diesel power
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents ➢ Formulate a safety plan associated with the operations, maintenance and repair of gas and diesel engines and equipment
MEETS STANDARDS	11.1.12.1 Identify safe practices for the operation and application of gas and diesel power as applied to agricultural equipment 11.1.12.2 Describe personal and environmental safety practices associated with the operation, maintenance and repair of gas and diesel power as applied to agricultural equipment
APPROACHES STANDARD	➢ Recognize potential hazards associated with gas and diesel engines and equipment

Nevada Academic Standards Correlation:

Math: 22.0
Science: 22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 11.0 Gas & Diesel power: Students will understand the basic principles, operations and maintenance of gas and diesel engines as used in agricultural settings

Performance Standard 11.2	Students will use safe practices and procedures during learning activities and procedures appropriate to gas and diesel power
EXCEEDS STANDARDS	• Support by practice those skills identified as meeting this standard
MEETS STANDARDS	11.2.12.1 Exercise safe work habits during learning activities involving gas and diesel power 11.2.12.2 Practice personal, environmental, hand and power tool safety during learning activities associated with gas and diesel power
APPROACHES STANDARD	• Outline personal safety practices associated with gas and diesel power.

Nevada Academic Standards Correlation:

Math: 22.0
Science: 22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 11.0 Gas & Diesel power: Students will understand the basic principles, operations and maintenance of gas and diesel engines as used in agricultural settings

Performance Standard 11.3	Students will demonstrate knowledge of the theoretical operation of a multiple cylinder engine.
EXCEEDS STANDARDS	➢ Compare and contrast the different types of essential gas and diesel engine systems
MEETS STANDARDS	11.3.12.1 Classify multiple cylinder engines according to ignition, fuel, cooling, lubrication and compression systems 11.3.12.2 Explain functions of ignition, fuel, cooling, lubrication and compression systems and their interrelationships
APPROACHES STANDARD	• Identify the different types of gas and diesel engine operating systems • Label the components within gas and diesel engines and equipment

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 1.0,2.0,3.0,4.0,20.0,22.0,23.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 11.0 Gas & Diesel power: Students will understand the basic principles, operations and maintenance of gas and diesel engines as used in agricultural settings

Performance Standard 11.4	Students will demonstrate a working knowledge of the maintenance and repair of multiple cylinder engines
EXCEEDS STANDARDS	➢ Diagnose common failures relating to ignition, fuel, cooling, lubrication and compression systems ➢ Repair common failures relating to ignition, fuel, cooling, lubrication and compression systems
MEETS STANDARDS	11.4.12.1 Identify common failures relating to ignition, fuel, cooling, lubrication and compression systems 11.4.12.2 Interpret service manual information for engine maintenance and repair 11.4.12.3 Diagnose common failures relating to ignition, fuel, cooling, lubrication, electrical and compression systems 11.4.12.4 Repair common failures relating to ignition, fuel, cooling, lubrication, electrical and compression systems
APPROACHES STANDARD	• Recognize the need for gas and diesel engine maintenance and repair • Review the service manual for maintenance and repair of gas and diesel engine

Nevada Academic Standards Correlation:

Math: 22.0
Science: 1.0,2.0,3.0,4.0,20.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 12.0 Hydraulics: Students will understand the basic principles, operations and maintenance of hydraulic systems as they are applied in the agricultural industry

Performance Standard 12.1	Students will show knowledge of and use safe practices and procedures appropriate to hydraulic systems in the agricultural industry
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents ➢ Formulate a safety plan associated with the operations, maintenance and repair of hydraulic systems
MEETS STANDARDS	12.1.12.1 Identify essential safety practices relating to the operation of agricultural equipment using hydraulics 12.1.12.2 Practice appropriate safety procedures relating to hydraulics
APPROACHES STANDARD	➢ Explain the importance of strict safety with hydraulic systems ➢ Discuss safe versus unsafe practices while working with hydraulic systems

Nevada Academic Standards Correlation:

Math: 22.0
Science: 1.0,2.0,3.0,20.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 12.0 Hydraulics: Students will understand the basic principles, operations and maintenance of hydraulic systems as they are applied in the agricultural industry

Performance Standard 12.2	Students will demonstrate a knowledge of the basic principles of hydraulics
EXCEEDS STANDARDS	• Interpret the four basic principles if hydraulics as they relate to complex hydraulic systems.
MEETS STANDARDS	12.2.12.1 Explain the 4 basic principles of hydraulics
APPROACHES STANDARD	➢ List the 4 basic principles of hydraulics

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,4.0,5.0,22.0
Science: 1.0,2.0,3.0,20.0,22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 12.0 Hydraulics: Students will understand the basic principles, operations and maintenance of hydraulic systems as they are applied in the agricultural industry

Performance Standard 12.3	Students will be able to identify the components of hydraulic systems
EXCEEDS STANDARDS	• Compare component specification in the development of complex hydraulic systems.
MEETS STANDARDS	12.3.12.1Describe the functions and relationships of the basic components of a hydraulic system
APPROACHES STANDARD	➢ Identify the basic components of a hydraulic system

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,4.0,5.0,22.0
Science: 1.0,2.0,3.0,20.0,22.0,23.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 12.0 Hydraulics: Students will understand the basic principles, operations and maintenance of hydraulic systems as they are applied in the agricultural industry

Performance Standard 12.4	Students will demonstrate appropriate maintenance and repair of a hydraulic system
EXCEEDS STANDARDS	➢ Estimate cost effectiveness of repair versus replacement ➢ Determine fluid service life
MEETS STANDARDS	12.4.12.1 Perform routine service and maintenance utilizing appropriate service manuals 12.4.12.2 Identify problems associated with hydraulic systems
APPROACHES STANDARD	➢ Assist in the maintenance and repair of hydraulic systems ➢ Recognize the advantages of a preventive maintenance program

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 1.0,2.0,3.0,20.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 12.0 Hydraulics: Students will understand the basic principles, operations and maintenance of hydraulic systems as they are applied in the agricultural industry

Performance Standard 12.5	Students will be able to design and build a hydraulic systems to be incorporated into an agricultural application.
EXCEEDS STANDARDS	➢ Schematically design a complex hydraulic systems ➢ Develop bill of materials from drawings ➢ Secure hydraulic system components ➢ Lay out and construct a hydraulic system from drawings
MEETS STANDARDS	12.5.12.1 Draw basic diagrams showing required components of a proposed hydraulic system 12.5.12.2 Select the proper components needed to construct a proposed hydraulic system 12.5.12.3 Assemble the required components to perform the desired function of the project
APPROACHES STANDARD	➢ Recognize the components of a basic hydraulic system ➢ Study basic components of hydraulic systems

Nevada Academic Standards Correlation:

Math: 1.0,3.0,22.0
Science: 1.0,2.0,3.0,20.0,22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 13.0: Agricultural Industrial machinery: Students will understand and demonstrate basic skills in operation, maintenance and repair of agricultural industrial machinery

Performance Standard 13.1	Students will know and demonstrate safe practices and procedures associated with the operation, maintenance and repair of agricultural industrial machinery and equipment
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents ➢ Formulate a safety plan associated with the operations, maintenance and repair of agricultural industrial machinery and equipment
MEETS STANDARDS	13.1.12.1 Recognize possible safety hazards in an agricultural shop setting and other work environments 13.1.12.2 Select and properly use safety equipment appropriate to working conditions 13.1.12.3 Explain the safety rules that must be practiced when working with agricultural machinery 13.1.12.4 Successfully pass (100%) safety test related to specific agricultural equipment
APPROACHES STANDARD	➢ Explain the importance of strict safety with agricultural machinery ➢ Describe safe versus unsafe agricultural machinery practices

Nevada Academic Standards Correlation:

Math: 22.0
Science: 20.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 13.0: Agricultural Industrial machinery: Students will understand and demonstrate basic skills in operation, maintenance and repair of agricultural industrial machinery

Performance Standard 13.2	Students will demonstrate knowledge of the theoretical operation of agricultural machinery.
EXCEEDS STANDARDS	➢ Compare and contrast agricultural machinery and their multiple uses ➢ Design a specific project demonstrating the relationship between size and speed of driver versus driven applications
MEETS STANDARDS	13.2.12.1 Classify agricultural machinery according to function, type, and style 13.2.12.2 Explain functions of the operating systems of applicable equipment 13.2.12.3 Explain the interrelationship of the operating systems found in applicable equipment 13.2.12.4 Explore the methods of transferring power using sprockets, pulleys, gears, belts and chains
APPROACHES STANDARD	➢ Compute pulley gear and sprocket ratios when given driver/driven formula ➢ Recognize different methods of attaching machinery to power sources ➢ Recognize different uses of agricultural machinery

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 1.0,3.0,4.0,20.0,22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 13.0: Agricultural Industrial machinery: Students will understand and demonstrate basic skills in operation, maintenance and repair of agricultural industrial machinery

Performance Standard 13.3	Students will demonstrate a working knowledge of the maintenance of agricultural machinery
EXCEEDS STANDARDS	➢ Interpret service manuals to determine approved maintenance procedures and intervals ➢ Determine cost effectiveness of maintenance procedures
MEETS STANDARDS	13.3.12.1 Explain the importance of setting up a workable preventive maintenance program and keeping accurate maintenance records 13.3.12.2 Use troubleshooting charts and service information to pinpoint the source of machinery problems 13.3.12.3 Properly prepare an applicable piece of equipment for storage 13.3.12.4 Determine the cost of routine equipment maintenance
APPROACHES STANDARD	➢ Assist in the routine maintenance of machinery and equipment ➢ Describe the importance of preventive maintenance

Nevada Academic Standards Correlation:

Math: 1.0,3.0,22.0
Science: 1.0,13.0,20.0,22.0,23.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 13.0: Agricultural Industrial machinery: Students will understand and demonstrate basic skills in operation, maintenance and repair of agricultural industrial machinery

Performance Standard 13.4	Students will demonstrate a working knowledge of the repair of agricultural machinery
EXCEEDS STANDARDS	➢ Interpret service manuals to complete machinery repair ➢ Estimate the cost effectiveness of machinery repair versus replacement
MEETS STANDARDS	13.4.12.1 Demonstrate a working knowledge of repair manuals and parts manuals 13.4.12.2 Outline the general procedure for troubleshooting the applicable agricultural machinery 13.4.12.3 Diagnose common failures relating to agricultural machinery 13.4.12.4 Repair common failures relating to agricultural machinery
APPROACHES STANDARD	➢ Assist in the repair of equipment ➢ Determine the cause of equipment failure

Nevada Academic Standards Correlation:

Math: 22.0
Science: 22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 13.0: Agricultural Industrial machinery: Students will understand and demonstrate basic skills in operation, maintenance and repair of agricultural industrial machinery

Performance Standard 13.5	Students will demonstrate skills in the safe operation of agricultural tractors and machinery
EXCEEDS STANDARDS	➢ Support by practice those skills identified as meeting this standard
MEETS STANDARDS	13.5.12.1 Successfully pass (100%) safety test on the operation of applicable tractors and machinery 13.5.12.2 Perform manufacturers recommended pre-operation safety inspection 13.5.12.3 Practice the safe operation of applicable tractors and machinery
APPROACHES STANDARD	➢ Outline tractor safety procedures

Nevada Academic Standards Correlation:

Math: 22.0
Science: 22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 14.0 Electrical Power: Students will understand and demonstrate the operation, maintenance and use of electrical power in agricultural applications

Performance Standard 14.1	Students will know and demonstrate safe practices and procedures associated with the operation, maintenance and repair of electrical power
EXCEEDS STANDARDS	➢ Recognize and evaluate potential safety hazards and act appropriately to prevent accidents ➢ Formulate a safety plan associated with the operations, maintenance and repair electrical motors and controls
MEETS STANDARDS	14.1.12.1 Recognize possible safety hazards while working with electric motors and controls 14.1.12.2 Select and properly use safety equipment appropriate to working conditions 14.1.12.3 Explain the safety rules that must be practiced when working with electrical motors and controls 14.1.12.4 Successfully pass (100%) safety test related to specific electric motors and controls 14.1.12.5 Explain the types of fire hazards associated with electric motors and controls 14.1.12.6 Identify the correct extinguisher used for fires associated with electric motors and controls
APPROACHES STANDARD	➢ Name the types of fire hazards associated with electrical motors and controls ➢ Recognize the importance of safety while working with electrical motors and controls

Nevada Academic Standards Correlation:

Math: 22.0
Science: 13.0,20.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 14.0 Electrical Power: Students will understand and demonstrate the operation, maintenance and use of electrical power in agricultural applications

Performance Standard 14.2	Students will describe the basic principles and operation of electric motors and controls
EXCEEDS STANDARDS	➢ Select motors and controls according to application
MEETS STANDARDS	14.2.12.1 Identify types, applications, and components of electric motors 14.2.12.2 Identify types and components of electric control systems 14.2.12.3 Explain the conversion of electrical energy to mechanical energy 14.2.12.4 Explain the function of various controls used in electrical applications
APPROACHES STANDARD	➢ List the types and applications of motors and controls ➢ Recognize the difference between electrical and mechanical power

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 1.0,3.0,22.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 14.0 Electrical Power: Students will understand and demonstrate the operation, maintenance and use of electrical power in agricultural applications

Performance Standard 14.3	Students will be able to design and build an electric system using motors and controls
EXCEEDS STANDARDS	➢ Design, select and assemble motors and controls to perform a given function
MEETS STANDARDS	14.3.12.1 Draw a basic electrical system including required components 14.3.12.2 Assemble basic electrical system using selected components
APPROACHES STANDARD	➢ Discuss various designs and applications of electrical motors and controls

Nevada Academic Standards Correlation:

Math: 22.0
Science: 3.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 14.0 Electrical Power: Students will understand and demonstrate the operation, maintenance and use of electrical power in agricultural applications

Performance Standard 14.4	Students will demonstrate appropriate maintenance and repair of electrical motor and control systems
EXCEEDS STANDARDS	➢ Diagnose common failures of electrical motors and controls ➢ Repair common failures relating to electrical motors and controls
MEETS STANDARDS	14.4.12.1 Demonstrate a working knowledge of repair manuals and parts manuals 14.4.12.2 Outline the general procedure for troubleshooting the applicable electric motors and controls 14.4.12.3 Diagnose common failures relating to electrical motors and controls 14.4.12.4 Repair common failures relating to electrical motors and controls
APPROACHES STANDARD	• Recognize the need for maintenance and repair of electrical motors and control systems • Review the service manual for maintenance and repair of electrical motors and control systems

Nevada Academic Standards Correlation:

Math: 1.0,2.0,3.0,22.0
Science: 3.0,22.0,24.0
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 15.0 Supervised Agricultural Experience: Students will explain the relationship between a Supervised Agricultural Exp (SAE) and their preparation for a career in Agricultural

Performance Standard 15.1	
EXCEEDS STANDARDS	• Student will qualify for the Silver State FFA Degree • Students will develop a career plan for accomplishing occupational objectives
MEETS STANDARDS	15.1.12.1 Students will identify and describe a career interest in agriculture or agriculture related occupation 15.1.12.2 Students will actively participate in and manage their individual SAE 15.1.12.3 Students will keep accurate records as prescribed by the Nevada State FFA policies and procedures 15.1.12.4 Students will show progress with individual achievement and growth in their SAE
APPROACHES STANDARD	• Students will define SAE • Students will plan their individual SAE • Students will differentiate between the types of SAE

Nevada Academic Standards Correlation:

Math:
Science:
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 16.0 Leadership/FFA: Students will recognize the traits of effective leaders and participate in leadership training through involved membership in the FFA

Performance Standard 16.1	
EXCEEDS STANDARDS	• Students will apply for a chapter office • Students will perform a speech for 6 to 8 minutes on an agriculture-related topic • Students will serve or chair on a standing chapter committee • Students shall demonstrate ten procedures of parliamentary law • Students will participate in a Career Development Event on the State level
MEETS STANDARDS	16.1.12.1 Students will recognize opportunities in high wage, high skill career opportunities in leadership and communications 16.1.12.2 Students will recite and explain the FFA Creed, Motto, Salute, and FFA Mission Statement 16.1.12.3 Students will demonstrate knowledge of the history of the organization, the chapter constitution and bylaws, and the chapter program of activities 16.1.12.4 Students will demonstrate knowledge of the FFA Code of Ethics, official dress, and the proper use of the FFA jacket 16.1.12.5 Students will describe the meaning of the FFA colors 16.1.12.6 Students will compete in a Career Development Event at the local level
APPROACHES STANDARD	• Students will demonstrate personal growth and development through membership in the FFA • Students will list and describe FFA awards available to members • Students will identify Career Development Events in which agriculture education students may participate

Nevada Academic Standards Correlation:

Math:
Science:
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 17.0 Employability Standard: Students shall achieve competence in workplace readiness, career development and lifelong learning

Performance Standard 17.1	
EXCEEDS STANDARDS	• Students will solve three problems using the seven steps of problem solving • Students will incorporate problem-solving skills through a Career Development Event in FFA
MEETS STANDARDS	17.1.12.1 Students will list and describe the seven steps to problem solving 17.1.12.2 Students will identify leadership styles used in problem solving 17.1.12.3 Demonstrates brainstorming techniques 17.1.12.4 Examines and explains the advantages and disadvantages of alternative solutions to one or more problems 17.1.12.5 Creates an action plan based upon a solutions to a work-related problem 17.1.12.6 Identifies the benefits of solving a work-related problem
APPROACHES STANDARD	• Students will explain the importance of problem solving

Nevada Academic Standards Correlation:

Math:
Science:
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 17.0 Employability Standard: Students shall achieve competence in workplace readiness, career development and lifelong learning

Performance Standard 17.2	
EXCEEDS STANDARDS	• Students shall demonstrate critical thinking skills in a Career Development Event • Students will demonstrate the skills necessary to identify, analyze, and offer solutions for agricultural issues • Students will formulate, implement, and evaluate an action plan
MEETS STANDARDS	17.2.12.1 Students will demonstrate critical thinking skills through the planning and implementation of their SAE program 17.2.12.2 Students will list and describe the skills necessary to identify, analyze, and offer solutions for agricultural issues 17.2.12.3 Students will use critical thinking processes to support solving problems and making decisions 17.2.12.4 Demonstrates critical thinking skills necessary in the workplace 17.2.12.5 Explain how emotional thinking and logical thinking affect decision making in the workplace 17.2.12.6 Recognizes patterns or relationships through observation and discovery
APPROACHES STANDARD	• Students will identify the importance of critical thinking skills in identifying, analyzing, and offering solutions for agricultural issues

Nevada Academic Standards Correlation:

Math:
Science:
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 17.0 Employability Standard: Students shall achieve competence in workplace readiness, career development and lifelong learning

Performance Standard 17.3	
EXCEEDS STANDARDS	• Students will identify ways to adapt their communication style to that of others • Students will describe and use techniques to improve listening, reading, writing, speaking, and nonverbal communication skills • Students will explain assertive communication
MEETS STANDARDS	17.3.12.1 Students will recognize and overcome communication barriers 17.3.12.2 Students will describe characteristics of four communication styles 17.3.12.3 Students will discuss the importance of self-communication and interpersonal communication 17.3.12.4 Students will memorize and recite the FFA Creed 17.3.12.5 Students will identify, research, prepare, and present an agriculturally related speech 17.3.12.6 Explain the benefits of effective communication skills in the workplace 17.3.12.7 Effectively interprets and responds to verbal and nonverbal messages 17.3.12.8 Demonstrates proper telephone etiquette 17.3.12.9 Effectively communicates thoughts, ideas, and information in writing 17.3.12.10 Organizes ideas and communicates orally; is able to effectively demonstrate job skills to others 17.3.12.11 Locates, understands and interprets written information in documents such as manuals, graphs and schedules 17.3.12.12 Selects and utilizes an appropriate medium for conveying messages with dignity and respect 17.3.12.13 Organize information into the appropriate format in accordance with standard practices, which includes prewriting, drafting, proofreading, editing/revising, and preparing final copy 17.3.12.14 Demonstrates sensitivity to cultural diversity in communication 17.3.12.15 Identifies common communication barriers and methods for improving communication

APPROACHES STANDARD	• Students will define communications • Students will explain the relationship between communication and leadership • Students will explain the purpose of communication • Students will explain the communication process

Nevada Academic Standards Correlation:

Math:
Science:
English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 17.0 Employability Standard: Students shall achieve competence in workplace readiness, career development and lifelong learning

Performance Standard 17.4	
EXCEEDS STANDARDS	• Students will be able to complete a computer-based application for an FFA awards program • Students will complete a computer-based record book program • Students will conduct agriculture research using print, multi-media, and internet resources and use graphs, charts, and/or diagrams to describe trends related to the topic
MEETS STANDARDS	17.4.12.1 Students will be able to operate a database program as it related to agriculture 17.4.12.2 Students will be able to operate a spreadsheet application related to agriculture 17.4.12.3 Students will be able to operate a word processing program 17.4.12.4 Students will construct a multimedia presentation 17.4.12.5 Students will access and demonstrate use of the Internet by accessing and exploring the Nevada State Agriculture web site and related agriculture sites 17.4.12.6 Demonstrate ability to utilize basic keyboarding techniques 17.4.12.7 Demonstrate ability to utilize other devices 17.4.12.8 Demonstrate ability to utilize various electronic research methods 17.4.12.9 Demonstrate knowledge of the basic technology systems currently available and how they apply to your field 17.4.12.10 Investigate and explain the use, benefits, and costs of technological developments in the workplace and school 17.4.12.11 Identify and demonstrate the appropriate use of technology to enhance the efficiency of the workplace and school 17.4.12.12 Demonstrate routing maintenance and repair of technological equipment

APPROACHES STANDARD	• Students will recognize the importance of information technology in agriculture • Students will list and describe the types of applications used in information technology

Nevada Academic Standards Correlation:

Math:
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Performance Level Descriptors

Content Standard 17.0 Employability Standard: Students shall achieve competence in workplace readiness, career development and lifelong learning

Performance Standard 17.5	
EXCEEDS STANDARDS	• Students will demonstrate ten procedures of parliamentary law • Students will lead a group discussion • Students will analyze five stages of group development
MEETS STANDARDS	17.5.12.1 Students will participate in a group panel discussion 17.5.12.2 Students will participate in one of the seven FFA leadership development conferences 17.5.12.3 Students will demonstrate five procedures of parliamentary law 17.5.12.4 Students will participate in planning and conducting of at least three official functions in the FFA Chapter Program of Activities 17.5.12.5 Students will explain the importance of democratic group leadership 17.5.12.6 Students will describe the characteristics of functional, task, and informal groups 17.5.12.7 Works cooperatively with others when given a group project 17.5.12.8 Explain traits necessary to effectively lead and influence individuals and groups 17.5.12.9 Demonstrates appropriate attitudes and behaviors for effective leadership 17.5.12.10 Demonstrates respect for team members, team processes and team goals 17.5.12.11 Participates in the implementation of a group's decision and evaluates the results 17.5.12.12 Demonstrate the qualities of an effective leader and team member 17.5.12.13 Describes the importance of a proper dress code
APPROACHES STANDARD	• Students will explain the importance of groups • Students will explain how to organize groups • Students will participate in FFA activities at the local level

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Math:
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Content Standard 17.0 Employability Standard: Students shall achieve competence in workplace readiness, career development and lifelong learning

Performance Standard 17.6	
EXCEEDS STANDARDS	• Students will model the eleven points of FFA Code of Ethics while attending a FFA activity
MEETS STANDARDS	17.6.12.1 Students will identify and understand the eleven points to the FFA Codes of Ethics 17.6.12.2 Students will develop personal work ethics through participation in their SAE 17.6.12.3 Students will discuss the importance of ethics practiced in the workplace 17.6.12.4 Develops personal work ethics through work experience 17.6.12.5 Describes the importance of ethics practiced in the workplace 17.6.12.6 Demonstrates regular attendance, promptness, and the willingness to follow instructions and complete an assigned task 17.6.12.7 Demonstrates appropriate personal and professional attitudes and behaviors 17.6.12.8 Maintains a safe, clean, and organized work area 17.6.12.9 Demonstrates awareness of legal responsibilities related to individual performance, safety and customer satisfaction 17.6.12.10 Demonstrates knowledge of various types of harassment
APPROACHES STANDARD	• Students will list the important ethics in the workplace

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Math:
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English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 17.0 Employability Standard: Students shall achieve competence in workplace readiness, career development and lifelong learning

Performance Standard 17.7	
EXCEEDS STANDARDS	• Students will discuss the factors that affect the development of resources in high-performance workplaces • Students will serve as a Chapter Officer
MEETS STANDARDS	17.7.12.1 Students will identify the important resources needed in a workplace 17.7.12.2 Students will develop skills in evaluating themselves and others in a workplace environment 17.7.12.3 Students will discuss the importance of managing resources in high-performance workplaces 17.7.12.4 Identifies and organizes the human resources needed to complete a job assignment 17.7.12.5 Effectively uses technology at its highest level to complete a job assignment 17.7.12.6 Demonstrate cooperation and leadership in a team at school or in a workplace setting 17.7.12.7 Use the basic components of effective time management 17.7.12.8 Recognize the need for management skills in the workplace with regard to stress, anger management, and substance abuse 17.7.12.9 Estimates costs and prepares a detailed work order 17.7.12.10 Develops a time schedule and prioritized task list to complete a job assignment
APPROACHES STANDARD	• Students will discuss the ingredients and resources included in managing resources in high-performance workplaces

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Math:
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English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 17.0 Employability Standard: Students shall achieve competence in workplace readiness, career development and lifelong learning

Performance Standard 17.8	
EXCEEDS STANDARDS	• Students will develop a plan to match careers with their personal characteristics • Students will utilize the resources found in the Career Information System to describe careers in production agriculture, agri-business, and agri-science
MEETS STANDARDS	17.8.12.1 Students shall develop an employment resume 17.8.12.2 Students shall complete a sample job application 17.8.12.3 Students undergo a mock employment interview 17.8.12.4 Students will demonstrate career planning through the development of their SAE 17.8.12.5 Prepares a job application, and personal resume 17.8.12.6 Completes a personal aptitude and interest inventory 17.8.12.7 Participates in a job interview 17.8.12.8 Establishes short-tem & long-term career goals 17.8.12.9 Uses the Nevada Career Information System or a similar computer-based program to research careers in a chosen field 17.8.12.10 Participates in an organized job-shadowing and community service activity 17.8.12.11 Constructs a career portfolio
APPROACHES STANDARD	• Students will differentiate between work, job, occupation, and career • Students will explain the diversity of agriculture education job placement • Students will list sources used in finding employment

Nevada Academic Standards Correlation:

Math:
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English:

Agriculture Mechanical Engineering Technology
Performance Level Descriptors

Content Standard 17.0 Employability Standard: Students shall achieve competence in workplace readiness, career development and lifelong learning

Performance Standard 17.9	
EXCEEDS STANDARDS	• Students will discuss how to merit employment promotions • Students will develop a portfolio based on participation in SAE and leadership activities • Students will participate in a school-based enterprise
MEETS STANDARDS	17.9.12.1 Students will identify and develop employability skills 17.9.12.2 Students will discuss and develop employable personal management skills 17.9.12.3 Students will discuss and develop employable academic and technical skills 17.9.12.4 Maintain an employment/career portfolio 17.9.12.5 Identify strategies for balancing work and family roles 17.9.12.6 Demonstrate understanding of the need for lifelong learning in a rapidly changing job market 17.9.12.7 Identify strategies to maintain employment in the face of job reductions 17.9.12.8 Develop long-term career-planning strategies 17.9.12.9 Identify various educational options needed for job advancement 17.9.12.10 Demonstrates interpersonal skills needed for job retention 17.9.12.11 Identify and model sound workplace ethics, such as loyalty, punctuality and initiative
APPROACHES STANDARD	• Students will explain the importance of positive response to authority • Students will explain the proper procedure for leaving employment

Nevada Academic Standards Correlation:

Math:
Science:
English: