ANIMAL SCIENCE STANDARDS

This document was prepared by:

Office of Career, Technical and Adult Education
Nevada Department of Education
755 N. Roop Street, Suite 201
Carson City, NV 89701

Adopted by the State Board of Education /
State Board for Career and Technical Education on
October 5, 2012

NEVADA STATE BOARD OF EDUCATION
NEVADA STATE BOARD FOR CAREER AND TECHNICAL EDUCATION

CTE MISSION STATEMENT:

The Office of Career, Technical and Adult Education is dedicated to developing innovative educational opportunities for students to acquire skills for productive employment and lifelong learning.

NEVADA DEPARTMENT OF EDUCATION

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

The development of Nevada Career and Technical standards and assessments is a collaborative effort sponsored by the Office of Career, Technical and Adult Education at the Department of Education and the Career and Technical Education Consortium of States. The Department of Education relies on teachers and industry representatives who have the technical expertise and teaching experience to develop standards and performance indicators that truly measure student skill attainment. Most important, however, is recognition of the time, expertise and great diligence provided by the writing team members in developing the Career and Technical Standards for Animal Science.

STANDARDS DEVELOPMENT MEMBERS

Arthur Center, Industry Representative
Delamar Valley Cattle Ranch, Ely

Dave Baker, Industry Representative
Baker Ranches, Inc., Baker

Clay Baker, Industry Representative
Baker Ranches, Inc., Baker

Lance Moore, Industry Representative
Steptoe Valley Ranch/Hoffman Breeders, Logan, UT

Joe Baptist, Agriculture Instructor
Yerington High School, Yerington

Tedd Heggie, Agriculture Instructor
White Pine County High School, Ely

Michelle Burrows, Agriculture Instructor
Academy of Arts, Careers & Technology, Reno

Ryan Carpenter, Agriculture Instructor
Owyhee High School, Owyhee

BUSINESS AND INDUSTRY VALIDATION

All CTE standards developed through the Nevada Department of Education are validated by business and industry through one or more of the following processes: (1) the standards are developed by a team consisting of business and industry representatives; or (2) a separate review panel was coordinated with industry experts to ensure the standards include the proper content; or (3) the adoption of nationally-recognized standards endorsed by business and industry.

The Animal Science standards were validated through the active participation by business and industry on the development team.

PROJECT COORDINATOR

Sue Poland, Education Programs Professional
Agriculture Education
Office of Career, Technical and Adult Education
Nevada Department of Education

AGRICULTURE AND NATURAL RESOURCES
Program Requirements

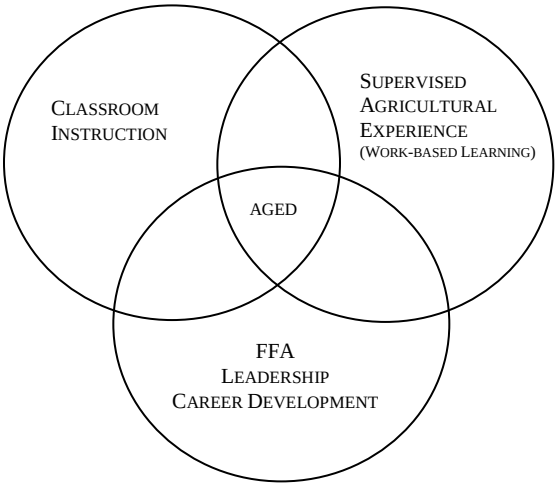
Occupations associated with agriculture production, natural resources, processing and distribution of food and fiber are important to the national interests and provide significant employment opportunities. Occupational education and training in agriculture and agri-business are essential to the continued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

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 Agricultural Experience (work-based learning), Nevada Revised Statute 385.110. Federal/Public law#105-225 which 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, Animal 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



INTRODUCTION

The standards in this document are designed to clearly state what the student should know and be able to do upon completion of an advanced high school Animal Science program. These standards are designed for a three-credit course sequence that prepares the student for a technical assessment directly aligned to the standards.

These exit-level standards are designed for the student to complete all standards through their completion of a program of study. These standards are intended to guide curriculum objectives for a program of study.

The standards are organized as follows:

Content Standards are general statements that identify major areas of knowledge, understanding, and the skills students are expected to learn in key subject and career areas by the end of the program.

Performance Standards follow each content standard. Performance standards identify the more specific components of each content standard and define the expected abilities of students within each content standard.

Performance Indicators are very specific criteria statements for determining whether a student meets the performance standard. Performance indicators may also be used as learning outcomes, which teachers can identify as they plan their program learning objectives.

The crosswalk and alignment section of the document shows where the performance indicators support the English Language Arts and Mathematics Common Core State Standards, and the Nevada State Science Standards. Where correlation with an academic standard exists, students in the Animal Science program perform learning activities that support, either directly or indirectly, achievement of one or more Common Core State Standards.

All students are encouraged to participate in the career and technical student organization (CTSO) that relates to their program area. CTSOs are co-curricular national associations that directly enforce learning in the CTE classroom through curriculum resources, competitive events, and leadership development. CTSOs provide students the ability to apply academic and technical knowledge, develop communication and teamwork skills, and cultivate leadership skills to ensure college and career readiness.

The Employability Skills for Career Readiness identify the “soft skills” needed to be successful in all careers, and must be taught as an integrated component of all CTE course sequences. These standards are available in a separate document.

CONTENT STANDARD 1.0 : EXPLORE THE STRUCTURE AND FUNCTION OF THE MAJOR ORGAN SYSTEMS OF LIVESTOCK	
PERFORMANCE STANDARD 1.1 : CATEGORIZE THE ANATOMY AND PHYSIOLOGY OF DIFFERENT ANIMAL SPECIES	
1.1.1	Describe how the animal body is organized in terms of cells, tissues, organs and organ systems
1.1.2	List and briefly describe the major organ systems found in vertebrate animals
1.1.3	Relate anatomy and physiology to livestock and small animal production
PERFORMANCE STANDARD 1.2 : EXAMINE THE ANATOMY AND PHYSIOLOGY OF THE SKELETAL SYSTEM	
1.2.1	Examine and describe the functions of the skeletal system
1.2.2	Identify and recall the names of bones found in livestock and companion animals
PERFORMANCE STANDARD 1.3 : EXPLORE THE INTEGUMENTARY, MUSCULAR, AND URINARY SYSTEMS	
1.3.1	Explain the integumentary system, and diagram the two layers of skin
1.3.2	Identify components of the urinary system, examine its role, and explain the function of the kidneys, ureters, urinary bladder, and urethra
PERFORMANCE STANDARD 1.4 : ANALYZE THE ENDOCRINE AND NERVOUS SYSTEMS	
1.4.1	Identify and describe the functions of the glands that compose the endocrine system
1.4.2	Identify and describe the functions of the organs that compose the nervous system
1.4.3	Explain the relationship that exists between the function of the endocrine and nervous systems
1.4.4	Describe the relationship between the senses and the nervous system
1.4.5	Describe the effect of hormones on behavior

PERFORMANCE STANDARD 1.5 : EXAMINE THE CIRCULATORY AND RESPIRATORY SYSTEM	
1.5.1	Identify the components of the respiratory system, and describe the functions of the organs that compose the respiratory system
1.5.2	Identify the components of the circulatory system including identification of all major veins and arteries and describe the functions of the organs that compose the circulatory system
1.5.3	Define blood, and describe the cell structure and components of blood
1.5.4	Explain blood's role in the exchange of materials throughout the body
PERFORMANCE STANDARD 1.6 : DIFFERENTIATE THE MAJOR PARTS OF THE DIGESTIVE SYSTEM	
1.6.1	Describe the functions of the stomach and the purpose of enzymes present in the stomach
1.6.2	Describe the functions of each of the three segments of the small intestine
1.6.3	Describe the functions of the cecum
1.6.4	Describe the functions of the large intestine

CONTENT STANDARD 2.0 : EXPLORE NUTRITIONAL REQUIREMENTS FOR LIVESTOCK	
PERFORMANCE STANDARD 2.1 : COMPARE AND CONTRAST FEEDSTUFFS FOR LIVESTOCK	
2.1.1	Explain the functions of feed and how they supply energy to livestock
2.1.2	Identify the various feed types and characteristics
2.1.3	Compare and contrast the types of feedstuffs (roughages, concentrates and supplements/additives)
2.1.4	Distinguish between good quality and poor quality feedstuffs, and examine how processing methods (grinding, rolling, palletizing, etc.) improve palatability
2.1.5	Describe how byproducts (dried distiller's grains, corn gluten meal, etc.) can be used in livestock rations
2.1.6	Examine storage and feeding practices of common feedstuffs
PERFORMANCE STANDARD 2.2 : CREATE BALANCED LIVESTOCK FEED RATIONS	
2.2.1	Identify the steps in balancing rations
2.2.2	Discuss the importance of feed analysis
2.2.3	Discuss how nutritional information is used in developing rations
2.2.4	Develop balanced rations using the Pearson Square method
PERFORMANCE STANDARD 2.3 : USE OF GROWTH HORMONES IN LIVESTOCK PRODUCTION	
2.3.1	Evaluate the use and effects of growth hormones in the livestock industry

CONTENT STANDARD 3.0 : EXPLORING THE LIVESTOCK REPRODUCTIVE SYSTEMS	
PERFORMANCE STANDARD 3.1 : COMPARE ANATOMY AND PHYSIOLOGY OF LIVESTOCK REPRODUCTIVE SYSTEMS	
3.1.1	Define and explain the steps of spermatogenesis and oogenesis, and describe sperm and egg cellular characteristics
3.1.2	Explain the phases of reproductive development in the life of an animal, and determine an animal's readiness for breeding
3.1.3	Interpret the signs of estrus in relation to the heat cycle
PERFORMANCE STANDARD 3.2 : COMPARE NATURAL ANIMAL REPRODUCTION	
3.2.1	Discuss the importance and explain the basics of animal reproduction
3.2.2	Construct a diagram of the phases of the estrous cycle
3.2.3	Describe the process of fertilization, gestation length and parturition in livestock species
3.2.4	Discuss the events that occur leading up to, during, and after parturition and describe the problems that may be encountered during parturition
PERFORMANCE STANDARD 3.3 : ANALYZE ANIMAL REPRODUCTION MANAGEMENT	
3.3.1	Identify common reproductive diseases that affect animals and determine appropriate prevention and treatment methods
3.3.2	Discuss reproduction management practices and determine how they affect reproductive performance
3.3.3	Compare and contrast common breeding systems used in livestock production
PERFORMANCE STANDARD 3.4 : EXPLORE ANIMAL REPRODUCTION TECHNOLOGY	
3.4.1	Describe the process of artificial insemination in common agricultural animals, including the collection, evaluation, extension, and storage of semen
3.4.2	Compare methods of technology used to detect estrus in common agricultural animals
3.4.3	Discuss the advantages and disadvantages of artificial insemination and natural breeding
3.4.4	Research the process of estrous synchronization, semen sexing, embryo transfer, cloning, and genetic engineering

PERFORMANCE STANDARD 3.5 : EXPLAIN THE PROCESS OF LACTATION	
3.5.1	Define lactation, and describe the structure and function of the mammary glands of common agricultural animals
3.5.2	Describe the components of milk and colostrum and their role in newborn livestock
3.5.3	Examine how factors such as genetics, disease, feed, environment, and body condition affect milk production

CONTENT STANDARD 4.0 : EXPLORE INHERITANCE AND THE GENETIC BASIS FOR ANIMAL SELECTION	
PERFORMANCE STANDARD 4.1 : IDENTIFY AND CLASSIFY VARIOUS TYPES AND CONFORMATION OF DOMESTIC ANIMALS	
4.1.1	Interpret performance data when evaluating livestock
4.1.2	Classify animals and their characteristics based on phenotype
4.1.3	Identify current industry standards for animal selection according to species
4.1.4	Classify body condition scoring system among the different species
PERFORMANCE STANDARD 4.2 : EXPLORE GENETICS	
4.2.1	Describe the importance of understanding genetics and recognize the impact of Gregor Mendel's development of the basic principles of heredity
4.2.2	Examine the components of DNA and describe its structure
4.2.3	Explain the principles of dominance and incomplete dominance
4.2.4	Explain the results of independent assortment
PERFORMANCE STANDARD 4.3 : ANALYZE HERITABILITY OF TRAITS	
4.3.1	Analyze heritability estimates as a selection factor in breeding programs
4.3.2	Predict the genotypes and phenotypes and sex from monohybrid and dihybrid crosses by using the Punnett square
4.3.3	Determine the effects of linkage, crossover and mutation in livestock production

CONTENT STANDARD 5.0 : EXPLORING ANIMAL WELFARE AND ANIMAL PRODUCTION ISSUES IN TODAY'S SOCIETY	
PERFORMANCE STANDARD 5.1 : ANALYZE THE PHILOSOPHIES SURROUNDING ANIMAL WELFARE	
5.1.1	Compare and contrast animal welfare versus the concept of animal rights
5.1.2	Research the basis for general concerns regarding animal welfare
PERFORMANCE STANDARD 5.2 : DISCUSS HISTORICAL EVENTS, CHANGING ATTITUDES AND LEGISLATION REGARDING ANIMAL USE	
5.2.1	Explore the historical events that contributed to the evolution of attitudes regarding animal usage
5.2.2	Examine legislation regarding current animal usage
PERFORMANCE STANDARD 5.3 : EXPLAIN CONTROVERSIAL PRACTICES AND CULTURAL DIFFERENCES IN ANIMAL USE	
5.3.1	Compare and contrast current controversial issues in animal usage
5.3.2	Distinguish between fact and propaganda when analyzing animal usage issues
5.3.3	Compare and contrast cultural differences and their impact on animal use

CONTENT STANDARD 6.0 : EVALUATE ANIMAL HEALTH	
PERFORMANCE STANDARD 6.1 : EXPLORE ANIMAL DISEASE TRANSMISSION AND IMMUNITY	
6.1.1	Describe the modes of transmission of infectious diseases
6.1.2	Examine the primary and secondary defenses the body uses to resist disease
6.1.3	Identify how passive and active immunity can be enhanced by management
PERFORMANCE STANDARD 6.2 : CLASSIFY ANIMAL MEDICATIONS	
6.2.1	Distinguish between the two classifications of drugs (biologics and pharmaceuticals)
6.2.2	Examine the use of vaccines in disease control and distinguish between modified live and killed vaccines
6.2.3	Examine the types (antibiotics, steroids, sulfa compounds, hormones) and forms (liquids, powder, boluses, drenches, and feed additives) of pharmaceuticals
6.2.4	Compare appropriate storage methods for medications and recognize how improper storage conditions may affect drugs
PERFORMANCE STANDARD 6.3 : ADMINISTER MEDICATION AND CARE	
6.3.1	Illustrate methods (topically, orally, and injected) used to administer vaccines and pharmaceuticals
6.3.2	Identify the instruments (multi-dose hypodermic syringe, hypodermic syringe and needle, drench gun, balling gun) used to administer vaccines and pharmaceuticals
6.3.3	Describe the types of injections, and determine the appropriate injection sites
6.3.4	Examine the components of a label found on animal medication and interpret a veterinarian's prescription
PERFORMANCE STANDARD 6.4 : INTERPRET IMPACT OF PARASITES ON ANIMAL HEALTH	
6.4.1	Identify common internal and external parasites that affect livestock and describe the diseases that they may spread or cause
6.4.2	Diagram and describe the complete life cycle of common parasites that affect animals
6.4.3	Recognize the importance of controlling parasites in disease management

PERFORMANCE STANDARD 6.5 : INVESTIGATE DISEASE CONTROL AND MANAGEMENT PRACTICES	
6.5.1	Explain how cleanliness affects disease control, and compare antiseptics and disinfectants
6.5.2	Evaluate vaccination and prevention methods, and describe the types of vaccines available
PERFORMANCE STANDARD 6.6 : MANAGE ANIMAL HEALTH	
6.6.1	Discuss beneficial record-keeping programs
6.6.2	Describe identification practices for various animals

CONTENT STANDARD 7.0 : EXPLORE THE LIVESTOCK INDUSTRY	
PERFORMANCE STANDARD 7.1 : EXPLORE THE BEEF INDUSTRY	
7.1.1	Recognize the advantages and disadvantages of beef production
7.1.2	Determine the facility and equipment needs in beef production
7.1.3	Compare and contrast the types of beef-production systems and their challenges
7.1.4	Analyze the components and challenges of a cow-calf operation and examine the factors that affect its profitability
7.1.5	Analyze the components and challenges of a backgrounding operation and examine the factors that affect its profitability
7.1.6	Analyze the components and challenges of a finishing operation and examine the factors that affect its profitability
PERFORMANCE STANDARD 7.2 : EXPLORE THE DAIRY INDUSTRY	
7.2.1	Explain the leading states and nations in dairy production's challenges concerning import and export markets
7.2.2	Recognize the advantages and disadvantages of dairy production
7.2.3	Determine the facility and equipment needs in dairy production
7.2.4	Compare and contrast the types of dairy-production systems and their challenges
PERFORMANCE STANDARD 7.3 : EXPLORE THE SWINE INDUSTRY	
7.3.1	Recognize the advantages and disadvantages of swine production
7.3.2	Determine the facility and equipment needs in swine production
7.3.3	Compare and contrast the types of swine-production systems and their challenges
PERFORMANCE STANDARD 7.4 : EXPLORE THE SHEEP AND GOAT INDUSTRY	
7.4.1	Recognize the advantages and disadvantages of sheep and goat production
7.4.2	Determine the facility and equipment needs in sheep and goat production
7.4.3	Compare and contrast the types of sheep and goat systems and their challenges

PERFORMANCE STANDARD 7.5 : EXPLORE THE POULTRY INDUSTRY	
7.5.1	Recognize the advantages and disadvantages of poultry production
7.5.2	Determine the facility and equipment needs in poultry production
7.5.3	Compare and contrast the types of poultry-production systems and their challenges
PERFORMANCE STANDARD 7.6 : EXPLORE THE EQUINE INDUSTRY	
7.6.1	Recognize the advantages and disadvantages of equine production
7.6.2	Determine the facility and equipment needs in equine production
7.6.3	Compare and contrast the types of equine-production systems and their challenges

CONTENT STANDARD 8.0 : EXPLORE THE RED MEAT INDUSTRY	
PERFORMANCE STANDARD 8.1 : IDENTIFY RED MEAT HARVESTING METHODS	
8.1.1	Outline the major steps involved in the processing of animal carcasses
8.1.2	Identify the average dressing percentages for cattle, sheep, and hogs; determine factors that affect dressing percentages; practice calculating dressing percentages
8.1.3	Identify the edible and inedible by-products of meat animals
PERFORMANCE STANDARD 8.2 : INVESTIGATE MEAT PRODUCT QUALITY	
8.2.1	Identify the wholesale and retail cuts of beef, pork, and lamb
8.2.2	Describe the beef grading system; analyze factors that affect quality and yield grades; and practice calculating yield and quality grades
8.2.3	Describe the swine grading system, and analyze factors that affect quality and yield grade
8.2.4	Describe the lamb grading system, and analyze factors that affect quality and yield grade

CONTENT STANDARD 9.0 :	DEVELOP A LOGICAL ARGUMENT FOR EVALUATION AND SELECTION OF ANIMALS
PERFORMANCE STANDARD 9.1 :	**EVALUATE LIVESTOCK USING SPECIES BREED AND TYPE CHARACTERISTICS**
9.1.1	Evaluate livestock in a systematic, organized manner according to industry standards
9.1.2	Evaluate livestock using EPD's and RFI's
9.1.3	Orally defend the selection of breeding replacement animals
9.1.4	Orally defend the selection of meat animals
9.1.5	Orally defend the selection of milk producing animals
9.1.6	Orally defend the selection of equine based on performance and conformation

CONTENT STANDARD 10.0 : EXPLORE LAND STEWARDSHIP	
PERFORMANCE STANDARD 10.1 : UNDERSTANDING LAND STEWARDSHIP PRACTICES	
10.1.1	Compare and contrast range/pasture ecosystems and their monitoring systems
10.1.2	Compare and contrast grazing systems
PERFORMANCE STANDARD 10.2 : DEVELOP AGENCY AND PUBLIC RELATIONS	
10.2.1	Explain the importance of close relations with land management agencies (Forest Service, BLM, etc.)
10.2.2	Explain the importance of good public relations and the effect that has on land management practices

CONTENT STANDARD 11.0 : EXAMINE MARKETING OF LIVESTOCK PRODUCTS	
PERFORMANCE STANDARD 11.1 : EVALUATE DIFFERENT LIVESTOCK MARKETING TECHNIQUES	
11.1.1	Compare and contrast video marketing versus traditional livestock sales
11.1.2	Compare and contrast tools and techniques for niche markets
11.1.3	Explain how the stock market affects the livestock industry
11.1.4	Develop a marketing plan for livestock or a livestock product

CONTENT STANDARD 12.0: EXPLORE CAREER OPPORTUNITIES IN THE ANIMAL SCIENCE INDUSTRY	
PERFORMANCE STANDARD 12.1 : UNDERSTAND EMPLOYMENT FIELDS IN THE ANIMAL SCIENCE INDUSTRY	
12.1.1	Research career opportunities in livestock production, pleasure and service animals, and animal science

CONTENT STANDARD 13.0 : PARTICIPATE IN LEADERSHIP TRAINING THROUGH MEMBERSHIP IN FFA	
PERFORMANCE STANDARD 13.1 : RECOGNIZE THE TRAITS OF EFFECTIVE LEADERS AND PARTICIPATE IN LEADERSHIP TRAINING THROUGH INVOLVEMENT IN FFA	
13.1.1	Expand leadership experience by serving as a chapter officer or on a committee
13.1.2	Exhibit leadership skills by demonstrating proper parliamentary procedure
13.1.3	Participate in a career development event at the local level or above
PERFORMANCE STANDARD 13.2 : UNDERSTAND THE IMPORTANCE OF SCHOOL AND COMMUNITY AWARENESS	
13.2.1	Participate in a school improvement or community development project

CONTENT STANDARD 14.0 :	DESCRIBE THE RELATIONSHIP BETWEEN A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) AND PREPARATION OF STUDENTS FOR A CAREER IN AGRICULTURE
PERFORMANCE STANDARD 14.1 : MAINTAIN A SUPERVISED AGRICULTURAL EXPERIENCE	
14.1.1	Accurately maintain SAE record books
14.1.2	Apply for proficiency award related to SAE program area
14.1.3	Actively pursue necessary steps to receive higher degrees in FFA

CROSSWALK AND ALIGNMENTS OF ANIMAL SCIENCE STANDARDS AND THE COMMON CORE STATE STANDARDS, THE NEVADA SCIENCE STANDARDS, AND THE COMMON CAREER TECHNICAL CORE STANDARDS

CROSSWALK (ACADEMIC STANDARDS)

The crosswalk of the Animal Science Standards shows links to the Common Core State Standards for English Language Arts and Mathematics and the Nevada Science Standards. The crosswalk identifies the performance indicators in which the learning objectives in the Animal Science program support academic learning. The performance indicators are grouped according to their content standard and are crosswalked to the English Language Arts and Mathematics Common Core State Standards and the Nevada Science Standards.

ALIGNMENTS (MATHEMATICAL PRACTICES)

In addition to correlation with the Common Core Mathematics Content Standards, many performance indicators support the Common Core Mathematical Practices. The following table illustrates the alignment of the Animal Science Standards Performance Indicators and the Common Core Mathematical Practices. This alignment identifies the performance indicators in which the learning objectives in the Animal Science program support academic learning.

CROSSWALK (COMMON CAREER TECHNICAL CORE)

The crosswalk of the Animal Science Standards shows links to the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Animal Science program support the Common Career Technical Core. The Common Career Technical Core defines what students should know and be able to do after completing instruction in a program of study. The Animal Science Standards are crossedwalked to the Agriculture, Food & Natural Resources Career ClusterTM (and the Animal Systems Career Pathway.

This Page was Intentionally Left Blank

CROSSWALK OF ANIMAL SCIENCE STANDARDS AND THE COMMON CORE STATE STANDARDS

CONTENT STANDARD 1.0: EXPLORE THE STRUCTURE AND FUNCTION OF THE MAJOR ORGAN SYSTEMS OF LIVESTOCK

Performance Indicators	Common Core State Standards and Nevada Science Standards
1.1.1	**Science: Life Science** L.12.B.1 Students know cell structures and their functions.
1.3.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
1.4.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
1.4.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
1.4.5	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
1.5.3	**Science: Life Science** L.12.B.1 Students know cell structures and their functions.
1.6.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
1.6.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
1.6.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
1.6.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

CONTENT STANDARD 2.0: EXPLORE NUTRITIONAL REQUIREMENTS FOR LIVESTOCK

Performance Indicators	Common Core State Standards and Nevada Science Standards
2.1.1	**Science: Physical Science** P.12.C.2 Students know energy forms can be converted.
2.1.3	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
2.1.4	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
2.2.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.
2.3.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

CONTENT STANDARD 3.0: EXPLORING THE LIVESTOCK REPRODUCTIVE SYSTEMS

Performance Indicators	Common Core State Standards and Nevada Science Standards
3.1.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research. **Science: Life Science** L.12.B.1 Students know cell structures and their functions.
3.2.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas.
3.2.3	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of the likely readers.
3.2.4	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas.
3.3.1	**Science: Life Science** L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism.
3.3.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas.

3.3.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of the likely readers. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
3.4.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of the likely readers.
3.4.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas. **Science: Life Science** L.12.D.6 Students know the concepts of natural and artificial selection.
3.4.4	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
3.5.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
3.5.3	**Science: Life Science** L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism. L.12.C.1 Students know relationships of organisms and their physical environment.

CONTENT STANDARD 4.0: EXPLORE INHERITANCE AND THE GENETIC BASIS FOR ANIMAL SELECTION

Performance Indicators	Common Core State Standards and Nevada Science Standards
4.1.1	**Science: Nature of Science** N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations.
4.1.2	**Science: Nature of Science** N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets.
4.1.4	**Science: Nature of Science** N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations.
4.2.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. **Science: Life Science** L.12.A.5 Students know how to predict patterns of inheritance. L.12.D.2 Students know similarity of DNA sequences gives evidence of relationships between organisms.
4.2.2	**Science: Life Science** L.12.A.2 Students know DNA molecules provide instructions for assembling protein molecules. L.12.A.3 Students know all body cells in an organism develop from a single cell and contain essentially identical genetic instructions.
4.2.3	**Science: Life Science** L.12.A.5 Students know how to predict patterns of inheritance.
4.2.4	**Science: Life Science** L.12.A.1 Students know genetic information passed from parents to offspring is coded in the DNA molecule. L.12.A.5 Students know how to predict patterns of inheritance.
4.3.1	**Science: Life Science** L.12.A.1 Students know genetic information passed from parents to offspring is coded in the DNA molecule. L.12.A.5 Students know how to predict patterns of inheritance.
4.3.2	**Science: Life Science** L.12.A.5 Students know how to predict patterns of inheritance.
4.3.3	**Science: Life Science** L.12.A.4 Students know several causes and effects of somatic versus sex cell mutations. L.12.A.5 Students know how to predict patterns of inheritance.

CONTENT STANDARD 5.0: EXPLORING ANIMAL WELFARE AND ANIMAL PRODUCTION ISSUES IN TODAY'S SOCIETY

Performance Indicators	Common Core State Standards and Nevada Science Standards
5.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. **Science: Nature of Science** N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways. N.12.B.3 Students know the influence of ethics on scientific enterprise.
5.1.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. **Science: Nature of Science** N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts. N.12.B.3 Students know the influence of ethics on scientific enterprise. N.12.B.4 Students know scientific knowledge builds on previous information.
5.2.1	**Science: Nature of Science** N.12.B.3 Students know the influence of ethics on scientific enterprise. N.12.B.4 Students know scientific knowledge builds on previous information.
5.2.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas.

5.3.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task. SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. **Science: Nature of Science** N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways. N.12.B.3 Students know the influence of ethics on scientific enterprise.
5.3.2	**Science: Nature of Science** N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts. N.12.B.3 Students know the influence of ethics on scientific enterprise.
5.3.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task. **Science: Nature of Science** N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways. N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts.

CONTENT STANDARD 6.0: EVALUATE ANIMAL HEALTH

Performance Indicators	Common Core State Standards and Nevada Science Standards
6.1.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. **Science: Life Science** L.12.C.1 Students know relationships of organisms and their physical environment.
6.1.2	**Science: Life Science** L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism.
6.1.3	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research. **Science: Life Science** L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism.
6.3.3	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
6.4.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research. **Science: Life Science** L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism. L.12.C.1 Students know relationships of organisms and their physical environment.
6.4.2	**Science: Life Science** L.12.C.1 Students know relationships of organisms and their physical environment.
6.4.3	**Science: Life Science** L.12.C.1 Students know relationships of organisms and their physical environment. L.12.C.2 Students know how changes in an ecosystem can affect biodiversity and biodiversity's contribution to an ecosystem's stability.
6.6.1	**Science: Nature of Science** N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations.

CONTENT STANDARD 7.0: EXPLORE THE LIVESTOCK INDUSTRY

Performance Indicators	Common Core State Standards and Nevada Science Standards
7.1.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
7.1.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
7.1.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
7.1.6	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
7.2.4	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
7.3.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
7.3.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
7.4.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

7.4.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
7.5.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
7.5.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
7.6.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
7.6.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

CONTENT STANDARD 8.0: EXPLORE THE RED MEAT INDUSTRY

Performance Indicators	Common Core State Standards and Nevada Science Standards
8.2.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.2.3	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.2.4	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

CONTENT STANDARD 9.0: DEVELOP A LOGICAL ARGUMENT FOR EVALUATION AND SELECTION OF ANIMALS

Performance Indicators	Common Core State Standards and Nevada Science Standards
9.1.1	**Science: Nature of Science** N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets.
9.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9.1.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **Science: Life Science** L.12.D.6 Students know the concepts of natural and artificial selection.
9.1.4	**English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **Science: Life Science** L.12.D.6 Students know the concepts of natural and artificial selection.
9.1.5	**English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **Science: Life Science** L.12.D.6 Students know the concepts of natural and artificial selection.
9.1.6	**English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **Science: Life Science** L.12.D.6 Students know the concepts of natural and artificial selection.

CONTENT STANDARD 10.0: EXPLORE LAND STEWARDSHIP

Performance Indicators	Common Core State Standards and Nevada Science Standards
10.1.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1b Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases. **English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **Science: Life Science** L.12.C.2 Students know how changes in an ecosystem can affect biodiversity and biodiversity's contribution to an ecosystem's stability. L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials. **Science: Nature of Science** N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations. N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations.
10.1.2	**Science: Nature of Science** N.12.A.5 Students know models and modeling can be used to identify and predict cause-effect relationships.

CONTENT STANDARD 11.0: EXAMINE MARKETING OF LIVESTOCK PRODUCTS

Performance Indicators	Common Core State Standards and Nevada Science Standards
11.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
11.1.4	**English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

CONTENT STANDARD 12.0: EXPLORE CAREER OPPORTUNITIES IN THE ANIMAL SCIENCE INDUSTRY

Performance Indicators	Common Core State Standards and Nevada Science Standards
12.1.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CONTENT STANDARD 13.0: PARTICIPATE IN LEADERSHIP TRAINING THROUGH MEMBERSHIP IN FFA

Performance Indicators	Common Core State Standards and Nevada Science Standards
13.1.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.1b Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.
13.1.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.1b Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.
13.2.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.1b Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

CONTENT STANDARD 14.0: DESCRIBE THE RELATIONSHIP BETWEEN A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) AND PREPARATION OF STUDENTS FOR A CAREER IN AGRICULTURE

Performance Indicators	Common Core State Standards and Nevada Science Standards
14.1.1	**English Language Arts: Language Standards** L.11-12.2b Spell correctly.
14.1.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

ALIGNMENT OF ANIMAL SCIENCE STANDARDS AND THE COMMON CORE MATHEMATICAL PRACTICES

Common Core Mathematical Practices	Animal Science Performance Indicators
1. Make sense of problems and persevere in solving them.	2.2.4 9.1.2
2. Reason abstractly and quantitatively.	2.2.4 4.1.1 7.1.4, 7.1.5 9.1.2 11.1.4
3. Construct viable arguments and critique the reasoning of others.	4.1.1 9.1.2
4. Model with mathematics.	2.2.4 8.1.3; 8.2.2, 8.2.3, 8.2.4 14.1.1, 14.1.2
5. Use appropriate tools strategically.	6.6.1 8.1.3, 8.2.2, 8.2.3, 8.2.4 9.1.2 11.1.4 14.1.1, 14.1.2
6. Attend to precision.	2.2.4 8.1.3; 8.2.2, 8.2.3, 8.2.4 11.1.4 14.1.1, 14.1.2
7. Look for and make use of structure.	2.2.1 4.1.1
8. Look for and express regularity in repeated reasoning.	2.2.4 4.1.1, 4.1.4

CROSSWALKS OF ANIMAL SCIENCE STANDARDS AND THE COMMON CAREER TECHNICAL CORE

Agriculture, Food & Natural Resources Career Cluster™ (AG)	Performance Indicators
1. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster™.	1.1.1; 2.3.1; 3.4.1-3.4.4 5.2.1, 5.2.2; 5.3.1, 5.3.2 11.1.1-11.1.4
2. Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster™ and the role of agriculture, food and natural resources (AFNR) in society and the economy.	5.1.1, 5.1.2; 5.3.3 6.1.3, 6.5.1; 13.2.1
3. Examine and summarize the importance of health, safety and environmental management systems in AFNR businesses.	2.3.1; 3.5.3 8.2.2-8.2.4
4. Demonstrate stewardship of natural resources in AFNR activities.	10.1.1-10.1.2 10.2.1-10.2.2
5. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources Career Pathways.	12.1.1
6. Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.	14.1.1

Animal Systems Career Pathway (AG-ANI)	Performance Indicators
1. Analyze historic and current trends impacting the animal systems industry.	3.4.4; 5.2.1; 5.3.1-5.3.3
2. Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.	1.4.5; 5.1.1, 5.1.2 7.1.1-7.1.6
3. Design and provide proper animal nutrition to achieve desired outcomes for performance, development, reproduction and/or economic production.	2.1.1-2.1.6; 2.2.1-2.2.4 3.5.1-3.5.3; 4.2.3; 4.3.1
4. Apply principles of animal reproduction to achieve desired outcomes for performance, development and/or economic production.	3.1.1-3.1.3; 3.2.1-3.2.4 3.3.1-3.3.3; 3.4.1-3.4.4 4.2.1; 4.3.1, 4.3.3 6.5.1, 6.5.2
5. Evaluate environmental factors affecting animal performance and implement procedures for enhancing performance and animal health.	2.3.1; 6.1.1, 6.3.1-6.3.4
6. Classify, evaluate and select animals based on anatomical and physiological characteristics.	1.1.3; 1.2.1, 1.2.2 4.1.1-4.1.4; 9.1.1, 9.1.2
7. Apply principles of effective animal health care.	6.1.1-6.1.3; 6.2.4 6.3.1-6.3.4; 6.4.3 6.5.1, 6.5.2; 6.6.1, 6.6.2