COMPREHENSIVE CARE AND MANAGEMENT OF EQUINE ANIMALS CURRICULUM

Grade Level(s): 11-12	**Curriculum Author(s):** Marisa Bedron

Course Description:
This course offers a thorough exploration into the multifaceted world of equine care, management, and facility design. Designed for students interested in equine sciences, veterinary studies, or careers in the equine industry, this comprehensive program covers critical aspects of horse health and stable management including: biosecurity, facility design and management, anatomy and physiology, nutrition, health management. Throughout the course, students will engage in both theoretical and practical activities, including case studies, facility visits, hands-on workshops, and interactive simulations. This approach ensures that students not only learn the science behind equine management but also acquire the practical skills needed to apply this knowledge effectively. Upon completion of this course, students will be well-prepared to pursue further education in equine studies or embark on a career in the equine industry, equipped with a holistic understanding of the demands to manage and care for horses responsibly and professionally. Students enrolled in this course and its pair (Equine Biology and Evolution) are eligible for University of Connecticut Early College Experience (ECE) credit. Every student must maintain and document an approved supervised agriculture experience (SAE) project and actively participate in the Woodbury FFA Chapter to develop premier leadership, personal growth, and career success through attending FFA meetings and participating in chapter events and planning.

Year At A Glance			
Unit Title	**Overarching Essential Question**	**Overarching Enduring Understanding**	**Vision of A Learner "I Can" Statements**
Principles and Practices of Equine Biosecurity	What strategies and practices are critical in preventing, managing, and controlling the spread of diseases and pests among animal populations to ensure their health and welfare?	Animal biosecurity is a critical concept in preventing and managing the spread of diseases among horses, and it has broader implications for public health, agriculture, and the environment.	TCC2, TCC3, TI1, DE1, DE4, P4
Equine Facility Design and Management	How can the design and management of a horse facility optimize animal welfare, ensure efficient operations, and meet regulatory and ethical standards?	Effective design and management of a horse facility are fundamental to ensuring optimal animal welfare, operational efficiency, and compliance with ethical and regulatory standards.	TCC4, AA1, DE2, P4

Equine Anatomy and Physiology: Foundations for Equine Health and Performance	How do specific anatomical and physiological traits impact the overall performance, health, and suitability of an animal for its intended purpose or breed standard?	The form and function of an animal's anatomy and physiology are crucial in determining their overall performance, health, and alignment with breed standards or specific roles.	TCC3, TCC4, TI2, TI3, AA1, AA3, DE2, DE3, P1
Equine Nutrition: Principles and Practices for Optimal Health	How do the nutritional needs of horses vary with their life stage, activity level, and health status, and how can these needs be met through balanced feeding practices?	Meeting the specific nutritional needs of horses through balanced and tailored feeding practices is crucial for their health, performance, and overall well-being.	TCC2, TCC3, TCC4, TI1, TI3, AA1, CCE2, CCE3
Equine Health and Management: Essentials for Optimal Care	How can effective management practices and preventative health measures be integrated to optimize the overall health, performance, and longevity of horses?	Comprehensive health and management practices, including preventative care, effective daily management, and proactive health monitoring, are crucial for ensuring the overall well-being, performance, and longevity of horses.	TCC1, TCC3, TCC4, TI1, TI2, AA1, AA3, CCE1, DE1, DE4

UNIT 1 | PRINCIPLES AND PRACTICES OF EQUINE BIOSECURITY

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

Agriculture, Food and Natural Resources Framework

AS.01.01.01.b Examine characteristics of animals that developed in response to environmental and production related influences.
AS.01.01.02.b Analyze the development of a variety of animal industries, technological advancements, research, and engineering practices and how they influenced products, services, and careers.
AS.01.02.03.b Execute effective record keeping and documentation practice for animal enterprises.
AS.01.03.01.b Analyze the roles of state and federal agencies and how they govern animal industries, international trade, and animal production policies.
AS.02.01.01.c Design quality-assurance programs and procedures for animal production.
AS.02.01.02.c Design safety procedures and plans for working with different species of animals based on animal behaviors and economical impact.
AS.02.02.01.b Utilize technology and equipment to perform animal husbandry and welfare procedures and techniques.
AS.02.02.03.b Analyze the impact of animal traceback and capabilities on producers and consumers.
AS.05.01.01.b Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe, sustainable, and efficient use of the facility.
AS.05.02.01.b Analyze animal facilities to determine if industry standards have been met.
AS.05.02.02.c Evaluate the impact of laws pertaining to animal systems.
AS.07.01.01.b Demonstrate the proper use and function of specific tools, techniques, and technology related to animal health management.
AS.07.01.04.b Analyze data to evaluate preventive measures for controlling and limiting the spread of diseases, parasites, and disorders among animals.
AS.07.02.01.b Analyze procedures at the local, state, and national levels to ensure biosecurity of the animal industry.

Common Core State Standards

ELA-LITERACY.L.11-12.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.
ELA-LITERACY.W.11-12.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
ELA-LITERACY.W.11-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
MATH.CONTENT.HSN.Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

MATH.CONTENT.HSN.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.
MATH.CONTENT.HSN.Q.A.3 Choose a level of accuracy appropriate to the limitations on measurement when reporting quantities.
MATH.CONTENT.HSS.IC.B.6 Evaluate reports based on data.

Vision of A Learner Attributes: Students will be able to independently use their learning to...

TCC: THINK CRITICALLY AND CREATIVELY

TCC2 I can evaluate evidence from multiple perspectives,and recognize their limitations and implications, in order to justify new conclusions.

TCC3 I can integrate relevant information to produce multiple valid solutions.

TI: TAKE INITIATIVE

TI1 I can implement a realistic plan and adapt when necessary to achieve my goals.

DE: DEMONSTRATE EMPATHY

DE1 I can acknowledge, process, and respond appropriately to others comments and perspectives.

DE4 I can work respectfully with all members of my community and support the needs of others.

P: PERSEVERE

P4 I can take on challenges and continuously engage in my own long-term strategies to overcome them to demonstrate through personal experience that failures are more instructive than discouraging.

Understandings: Students will understand that…

- Effective biosecurity practices help to prevent the introduction and transmission of infectious diseases among animals, which can have significant impacts on their health and productivity.
- My animal diseases can be transmitted to humans (zoonoses).
- Strong biosecurity measures reduce the risk of zoonotic and transmittable diseases jumping from animal to animal, or animal to human.
- Preventing disease outbreaks through biosecurity not only protects animal health but also maintains the economic stability of farming and agriculture industries by avoiding costly disease management and loss of equine animals.
- Biosecurity requires a combination of practices, including sanitation, vaccination, quarantine, and monitoring, all of which need to be tailored to specific animal species and environments.

Essential Questions:

- What are the key components of an effective equine biosecurity plan?
- How can biosecurity measures prevent the spread of infectious disease in equine facilities?
- What roles do isolation and quarantine play in managing disease outbreaks among horses?
- How can routine practices and facility design contribute to enhanced biosecurity?
- What are the consequences of inadequate biosecurity measures on the health and performance of horses?

Students will know…

- The fundamental principles of biosecurity, including the reasons for its implementation and the risks of non-compliance.

Students will be able to…

- Identify potential biosecurity risks in an equine facility and evaluate the effectiveness of existing measures.

• Knowledge of common infectious diseases in horses, their modes of transmission, symptoms, and impact on health. • Awareness of preventative measures such as vaccination, deworming, and regular veterinary checks. • Familiarity with the protocols for isolating new or sick horses to prevent the spread of disease within a population. • Understanding of effective sanitation practices, including the proper cleaning and disinfection of stalls, equipment, and transport vehicles. • Knowledge of procedures to follow in the event of a disease outbreak, including reporting protocols and steps to mitigate spread. • Insight into the legal requirements and ethical considerations in managing horse health and biosecurity.	• Create a comprehensive biosecurity plan tailored to a specific equine facility, considering its unique challenges and requirements. • Properly implement quarantine measures for new or ill horses to prevent disease transmission. • Execute effective sanitation and disinfection protocols to maintain a clean and disease-free environment. • Respond appropriately to disease outbreaks, including implementing emergency protocols, communicating with veterinary professionals, and informing relevant authorities. • Teach peers, staff and facility visitors about biosecurity practices to ensure widespread compliance and understanding. • Critically assess and suggest improvements for facility design to enhance biosecurity measures and disease prevention.
Key Vocabulary: biocontainment, biosecurity, carrier, decontamination, disease transmission, disinfections, fomite, health certificate, infectious agent, isolation, outbreak, pathogen, personal protective equipment (PPE), quarantine, risk assessment, sanitation, surveillance, traffic control, vaccination, vector control	
Assessment Evidence	
Performance Tasks: *Classwork:* Complete a biosecurity scavenger hunt of the Nonnewaug High School Education Farm facilities. **P4** *Classwork:* Conduct a fictional or industry equine facility risk assessment identifying potential biosecurity threats such as disease transmission and human activity to assess the potential for biosecurity breaches. **TCC2, TI1** *Interim:* Analyze a real-world case study highlighting a biosecurity breach to identify factors that led to the breach, evaluate the response, and propose alternative strategies of prevention. **DE1, DE4, TCC3**	**Other Evidence:** *Summative:* Written summative (test) assessment.
Learning Plan	

- Students will assess methods to protect equine animals from disease and transmission. **P4**
- Students will apply biosecurity protocols to protect equine animals from disease and transmission. **TCC2, TI1**
- Students will evaluate the impact of current disease outbreaks in their local equine industry. **DE1, DE4**

Teacher Resources:
Teacher Created Resources

UNIT 2 | EQUINE FACILITY DESIGN AND MANAGEMENT

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

Connecticut Agriculture, Food and Natural Resources Framework

AS.05.01.01.a Describe the types of facilities needed to house and produce animal species in a safe, efficient, and human manner.
AS.05.01.01.b Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe, sustainable, and efficient use of the facility.
AS.05.01.01.c Design an animal facility focusing on animal requirements, economic efficiency, sustainability, safety, and ease of handling.
AS.05.01.02.a Identify equipment, technology, and handling facility procedures used in modern animal production (e.g., climate control devices, sensors, automation, etc.).
AS.05.01.02.b Analyze the use of modern equipment, technology, and handling facility procedures to determine if they enhance the safe, economic, and sustainable production of animals.
AS.05.01.02.c Recommend enhancements to equipment, technology, and handling procedures to improve sustainability and production efficiency.
AS.05.02.01.a Summarize the general standards that must be met in facilities for animal production (e.g., environmental, local zoning considerations, construction, etc.)
AS.05.02.01.b Analyze animal facilities to determine if industry standards have been met.
AS.05.02.02.a Categorize laws and regulations pertaining to animal systems (e.g., environmental, consumer protection, entertainment, etc.).
AS.05.02.02.b Analyze laws pertaining to animal systems.
AS.05.02.02.c Evaluate the impact of laws pertaining to animal systems.

Common Core State Standards

ELA-LITERACY.L.11-12.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering

vocabulary knowledge when considering a word or phrase important to comprehension or expression.
ELA-LITERACY.W.11-12.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
ELA-LITERACY.W.11-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Vision of A Learner Attributes: Students will be able to independently use their learning to...

TCC: THINK CRITICALLY AND CREATIVELY

TCC4 I can integrate my learning to adapt to experiences in the classroom, career life.

AA: ADAPT AND ADJUST

AA1 I can evaluate different approaches and justify the best pathway to success.

DE: DEMONSTRATE EMPATHY

DE2 I can honor my own feelings and show empathy toward others through my actions.

P: PERSEVERE

P4 I can take on challenges and continuously engage in my own long-term strategies to overcome them to demonstrate through personal experience that failures are more instructive than discouraging.

Understandings: Students will understand that…

- Effective equine facility design enhances the health, safety, and welfare of horses by accommodating their physical and behavioral needs.
- Sustainable management practices within equine facilities are essential for long-term operational success and environmental stewardship.
- Safety and efficiency in equine facility design not only protects horses and handlers but also ensures smooth daily operations and reduces costs.
- Facilities must be adaptable to changes in management practices, technology, and the evolving needs of horses and their handlers.

Essential Questions:

- How do the principles of equine behavior and welfare influence facility design?
- What features of equine facility design are critical for optimizing the health and safety of horses and handlers?
- How can equine facilities be managed to minimize environmental impacts while maximizing operational efficiency?
- In what ways can equine facility designs be future-proofed to adapt to new technologies and changes in horse care practices?

Students will know…

- Understand the essential elements of equine facility design, including stabling, exercise areas, and storage needs.
- Recognize how facility design affects horse behavior, health, and performance.
- Be aware of environmental impacts related to equine facility management, such as waste disposal and water conservation.

Students will be able to…

- Develop a simple layout that incorporates essential features such as stabling, feeding areas, waste management, and traffic flow.
- Implement management strategies that ensure cleanliness, safety, and environmental sustainability.
- Critically assess existing equine facility designs for efficiency,

• Know the regulatory and safety standards applicable to equine facility construction and management. • Be informed about current and emerging technologies that can enhance facility management and horse care.	safety and horse welfare. • Develop a comprehensive maintenance schedule that addresses both routine upkeep and long-term sustainability. • Use knowledge of equine welfare and behavior to make informed decisions about facility features that enhance horse well-being.
Key Vocabulary: aisleway, anti-slip flooring, arena, automated feeders, biosecurity protocols, composting system, cross-tie area, drafting, emergency evacuation plan, emergency evacuation plan, environmental enrichment, equine monitoring systems, feed room, fire suppression system, fire suppression system, green roofing, grooming bay, gutter drainage system, hay loft, heat stress management, hydronic heating, isolation stall, iso-thermal zone, lameness examination area, louvered ventilation, manure management, nutritional supplementation, paddock, perimeter fencing, perimeter fencing, preventative maintenance, rainwater harvesting, remote irrigation system, safety mats, safety mats, sawdust bedding, solar panels, stable, stall card, temperature sensors	
Assessment Evidence	
Performance Tasks: *Classwork:* Assess form, function and quality of different equine facilities to meet animal welfare, biosecurity and efficient management practices. **TCC4** *Classwork:* Create a maintenance timeline for the Nonnewaug High School Education Farm equine facilities. **AA1, P4** *Summative:* Design an equine facility to meet a hypothetical client's needs to meet animal welfare, biosecurity and efficient management practices considering stall design and placement, feeding areas, water sources and equine amenities. **AA1**	**Other Evidence:** *Interim:* Written interim (quiz) assessment.
Learning Plan	
• Students will design an equine facility using best management practices. **AA1, P4** • Students will explore a multitude of equine facility designs to assess how they meet animal welfare, biosecurity and efficient management needs. **DE2, CCE2**	
Teacher Resources: Teacher Created Resources	

UNIT 3 | EQUINE ANATOMY AND PHYSIOLOGY: FOUNDATIONS FOR EQUINE HEALTH AND PERFORMANCE

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

Connecticut Agriculture, Food and Natural Resource Framework

AS.01.01.01.b Examine characteristics of animals that developed in response to environmental and production related influences.
AS.06.01.01.b Classify animals using a taxonomic classification system.
AS.06.01.03.c Communicate knowledge of animal systems with proper classification terms to others in an effective and accurate manner.
AS.06.02.03.a Identify the properties, locations, functions and types of animal cells, tissues, organs and body systems.
AS.06.02.03.b Compare and contrast animal cells, tissues, organs, body systems types, and functions among animal species.
AS.06.02.03.c Apply knowledge of anatomical and physiological characteristics of animals to make production and management decisions.
AS.06.03.01.a Identify optimal anatomical and physiological characteristics according to established breed standards.
AS.06.03.01.b Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.
AS.06.03.01.c Select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction.

Common Core State Standards

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ELA-LITERACY.W.11-12.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
ELA-LITERACY.W.11-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
ELA-LITERACY.RH.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

Vision of A Learner Attributes: Students will be able to independently use their learning to...

TCC: THINK CRITICALLY AND CREATIVELY

TCC3 I can integrate relevant information to produce multiple valid solutions.
TCC4 I can integrate my learning to adapt to experiences in the classroom, career and life.

TI: TAKE INITIATIVE

TI2 I can evaluate my objectives and variety of credible resources to find the best solutions for any challenge.

TI3 I can formulate and investigate probing questions to further my learning.

AA: ADAPT AND ADJUST

AA1 I can evaluate different approaches and justify the best pathway to success.

AA3 I can adjust my expectations and behaviors to succeed in a changing and unpredictable environment.

DE: DEMONSTRATE EMPATHY

DE2 I can honor my own feelings and show empathy toward others through my actions.

DE3 I can recognize my triggers, use appropriate coping strategies, and access relevant resources to help regulate my emotional response.

P: PERSEVERE

P1 I can self-reflect and seek feedback to build upon my strengths, apply those strengths to overcome obstacles, and share my strategies with others.

Understandings: Students will understand that…

- The interconnectedness of equine body systems is essential for recognizing how they collectively support the health, movement, function of horses.
- A deep understanding of equine anatomy and physiology is critical for effective equine care, treatment, and management.
- Knowledge of how equine bodies function underpins all aspects of training, performance, and rehabilitation in the equine industry.
- Horses have evolved specific physiological traits that enable their remarkable performance capabilities, which must be understood to optimize their care and management.

Essential Questions:

- How do the various systems of a horse interact to affect its overall health and capabilities?
- What anatomical and physiological characteristics are unique to horses and how do these traits enhance their performance?
- How can knowledge of equine anatomy and physiology inform better health care, training, and management practices?
- What are the implications of equine physiology for veterinary care and preventative health practices?

Students will know...

- The major bones, muscles, and organs of the equine body and their functions.
- How key systems such as the skeletal, muscular, respiratory, circulatory, and digestive systems operate and interact in horses.
- Common anatomical and physiological disorders in horses, including symptoms and potential treatments.
- Evolutionary adaptations that enable horses to perform specific tasks or endure environmental stresses.
- Principles of preventative care that arise from an understanding of equine anatomy and physiology.

Students will be able to...

- Identify and label the major anatomical features of a horse, including bones, muscles, and organs.
- Explain how different bodily systems in horses interact and the implications for health and performance.
- Apply their understanding of anatomy and physiology to practical scenarios in equine care, such as diet planning, exercise regimes, and disease prevention.
- Analyze case studies involving equine health issues to diagnose problems and propose treatment based on anatomical and physiological knowledge.
- Effectively communicate understanding and finding to peers,

	instructors, or professionals in the field through presentations, reports or discussions.

Key Vocabulary:
alveoli, anatomy, circulatory system, cortex, digestive system, endocrine system, enzyme, gait, homeostasis, hoof, joint, ligament, lymphatic system, metabolism, muscular system, nervous system, neuron, palpation, physiology, respiratory system, skeletal system, tendon, vaccine

Assessment Evidence

Performance Tasks:	**Other Evidence:**
Classwork: Participate in a practical examination identifying and labeling various anatomical structures on diagrams, models and live animals. **TI2** *Interim:* Prepare a detailed presentation explaining a physiological system and how it functions in the horse. **TCC3, AA1** *Summative:* Participate in a mock showmanship presentation focusing on evaluation of a partner animal's anatomical confirmation. **DE2, DE3, P1, AA3** *Classwork:* Oral presentation of visual observations of equine confirmation and physiological performance. **TI3, TCC3, TCC4,**	*Interim:* Written interim (quiz) assessment.

Learning Plan

- Students will work with a partner animal to present a showmanship clinic experience showcasing the animal's anatomical confirmation. **DE2, DE3, P1, AA3**
- Students will identify and label equine anatomical structures, and outline their functions in the body. **TI2**
- Students will present a set of oral reasons describing their thoughts and opinions on the confirmation of equine animals. **TI3, TCC3, TCC4**

Teacher Resources:
Teacher Created Resources

UNIT 4 | EQUINE NUTRITION: PRINCIPLES AND PRACTICES FOR OPTIMAL HEALTH

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

Agriculture, Food and Natural Resources Framework

AS.03.01.01.a Analyze essential nutrients required for animal health and analyze each nutrient's role in growth and performance.
AS.03.01.01.b Differentiate needs of animals based on growth stages, anatomy, and/or production systems (e.g., maintenance, gestation, work, growth, etc.).
AS.0301.01.c Develop a nutritionally balanced ration for an animal based on its production stage.
AS.03.02.01.a Compare and contrast common types of feedstuffs and their general quality and condition.
AS.03.02.01.b Evaluate the adequacy of feed rations using data from the analysis of feedstuffs, animal requirements, and performance.
AS.03.02.01.c Select appropriate feedstuffs for animals based on a variety of factors (e.g., economics, digestive system, and nutritional needs, etc.).
AS.03.02.03.a Summarize the purpose, impact, and mode of action of feed additives and growth promotants in animal production.
AS.03.02.03.b Compare and contrast methods that utilize feed additives and growth promotants with natural production practices.
AS.03.03.01.a Identify the tools, equipment, techniques, and technology used to meet animal nutrition needs and ensure an abundant, safe, and quality food supply.
AS.03.03.02.a Summarize the meaning of various components of feed labels and feeding directions.
AS.03.03.02.b Apply information from a feed label and feeding directions to feed animals.
AS.03.03.02.c Evaluate the potential impacts, positive and negative, of compliance and/or noncompliance with a feed label and feeding directions.

Common Core State Standards

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ELA-LITERACY.W.11-12.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
ELA-LITERACY.W.11-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Vision of A Learner Attributes: Students will be able to independently use their learning to…

TCC: THINK CRITICALLY AND CREATIVELY

TCC2 I can evaluate evidence from multiple perspectives,and recognize their limitations and implications, in order to justify new conclusions.
TCC3 I can integrate relevant information to produce multiple valid solutions.
TCC4 I can integrate my learning to adapt to experiences in the classroom, career and life.

TI: TAKE INITIATIVE

TI1 I can implement a realistic plan and adapt when necessary to achieve my goals.
TI3 I can formulate and investigate probing questions to further my learning.

AA: ADAPT AND ADJUST

AA1 I can evaluate different approaches and justify the best pathway to success.

CCE: COLLABORATE AND COMMUNICATE EFFECTIVELY

CCE2 I can give and receive actionable and relevant feedback with openness to be able to determine meaningful revisions for success.
CCE3 I can show initiative in prompting group discourse and fostering collaboration among others,providing actionable feedback, and working with others to solve problems and/or design products.

Understandings: Students will understand that…

- Understanding the basic nutritional needs of horses is essential for maintaining their health, performance, and longevity.
- The diet of a horse directly impacts its physical condition, performance capabilities, and susceptibility to various health issues.
- Effective equine nutrition involves tailoring diets to meet the individual needs of horses based on their age, weight, activity level, and health status.
- Proper nutrition is a key preventative measure that can reduce the likelihood of many common equine health problems.

Essential Questions:

- What are the fundamental components of a balanced equine diet and why are they important for horse health?
- How does a horse's nutritional needs change with age, activity level, and health status?
- What are the common nutritional disorders in horses, and how can they be prevented through diet?
- How can horse owners evaluate and adjust diets to ensure optimal health and performance.
- What role do supplements play in equine nutrition, and when are they necessary?

Students will know…

- The specific dietary needs of horses, including macronutrients (carbohydrates, proteins, fats) and micronutrients (vitamins and minerals).
- Various types of feeds and forages available for horses, their nutritional content, and appropriate use.
- Circumstances under which supplements are needed to address dietary deficiencies or support health conditions.
- Strategies for managing diets in special situations such as pregnancy, lactation, old age, or competitive training.
- How improper nutrition can lead to health problems such as colic, laminitis, and metabolic disorders.

Students will be able to…

- Analyze and critique horse diets to ensure they meet nutritional requirements based on the horse's profile.
- Develop balanced diet plans for horses in various life stages and with different activity levels.
- Implement and manage feeding regimes that accommodate individual horse needs and stable management practices.
- Identify signs of nutritional deficiencies and excesses, and know how to correct them.
- Evaluate the necessity and efficacy of dietary supplements in an equine diet.
- Communicate nutritional plans and rationales to horse owners, trainers, and caretakers effectively.

Key Vocabulary:

ad libitum, amino acids, balanced diet, by-product, carbohydrate, carbohydrate metabolism, chelated minerals, colic, complete feed, concentrate, crude protein (CP), digestible energy (DE), digestible protein (DP), endotoxin, energy density, fat, feed efficiency, feeding behavior, fiber, forage, forage analysis, forage-to-concentrate ratio, hydration, laminitic diet, laminitis, metabolic syndrome, metabolizable energy (ME), microbial protein, mineral bioavailability, minerals, net energy (NE), non-structural carbohydrates (NSC), nutrient density, nutrient density, nutrient interactions, nutrient partitioning, nutrient requirements, pellets, performance nutrition, phytate, protein, ration, structural carbohydrates, supplement, total digestible nutrients (TDN), vitamins

Assessment Evidence

Performance Tasks:
Classwork: Conduct a nutrient analysis of several common feedstuffs used in equine diets to delineate between concentrates, forages and supplements. **TCC2, CCE2**

Interim: Conduct a pasture assessment of the Nonnewaug Education Farm pasture facilities to determine nutritional value, poisonous plants and management needs. **TCC4**

Classwork: Use the Pearson Square methodology to create a balanced ration for an equine animal, calculating the proportions of each feed ingredient needed to meet an animal's nutritional requirements. **TI1, CCE3**

Other Evidence:
Interim: Written interim (quiz) assessment.

Summative: Written summative (test) assessment.

Classwork: Take instructional notes on the digestive system organs and their functions.

Classwork: Complete a scenario activity determining appropriate feeding methods for various equine life stages. **AA1 TI1, CCE3**

Learning Plan

- Students will evaluate the types of hay. **TI3**
- Students will learn the organs present in the equine digestive system and each of the organ's functions. **TCC3**
- Students will identify types of feed concentrates. **TCC2, CCE2**
- Students will learn the methods of feeding for different stages of the equine life cycle. **AA1**

Teacher Resources:
Teacher Created Resources

UNIT 5 | EQUINE HEALTH AND MANAGEMENT: ESSENTIALS FOR OPTIMAL CARE

Established Goals:

Connecticut Agriculture, Food and Natural Resources Framework

AS.02.01.02.b Analyze animal welfare procedures used to ensure safety and minimize stress during management practices.
AS.07.01.01.b Demonstrate the proper use and function of specific tools, techniques, and technology related to animal health management.
AS.07.01.01.c Select tools, techniques, and technology to meet specific animal health management goals.
AS.07.01.02.a Explain methods of determining animal health and disorders.
AS.07.01.02.b Analyze illnesses and disorders of animals based on symptoms and problems caused by wounds, diseases, parasites, and physiological disorders.
AS.07.01.03.c Treat common diseases, parasites, and physiological disorders of animals according to directions prescribed by an animal health professional.
AS.07.01.04.a Identify characteristics of causal agents and vectors of diseases and disorders in animals.
AS.07.01.04.b Analyze data to evaluate preventative measures for controlling and limiting the spread of diseases, parasites, and disorders among animals.
AS.07.01.05.a Explain the clinical significance of common veterinary methods and treatment (e.g., aseptic techniques, antibiotic use, wound management, etc.).

Common Core State Standards

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ELA-LITERACY.W.11-12.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
ELA-LITERACY.W.11-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
MATH.CONTENT.HSN.Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
MATH.CONTENT.HSN.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.
MATH.CONTENT.HSN.Q.A.3 Choose a level of accuracy appropriate to the limitations on measurement when reporting quantities.
MATH.CONTENT.HSS.IC.B.6 Evaluate reports based on data.

Vision of A Learner Attributes: Students will be able to independently use their learning to...

TCC: THINK CRITICALLY AND CREATIVELY

TCC1 I can ask purposeful, insightful questions to find a variety of innovative solutions.
TCC3 I can integrate relevant information to produce multiple valid solutions.
TCC4 I can integrate my learning to adapt to experiences in the classroom, career and life.

TI: TAKE INITIATIVE

TI1 I can implement a realistic plan and adapt when necessary to achieve my goals.
TI2 I can evaluate my objectives and variety of credible resources to find the best solutions for any challenge.

AA: ADAPT AND ADJUST

AA1 I can evaluate different approaches and justify the best pathway to success.

AA3 I can adjust my expectations and behaviors to succeed in a changing and unpredictable environment.

CCE: COLLABORATE AND COMMUNICATE EFFECTIVELY

CCE1 I can initiate discussion with my peers and teachers about a variety of topics, respecting differing viewpoints, actively listening to others, and responding thoughtfully with peer-reviewed evidence that is free of bias.

DE: DEMONSTRATE EMPATHY

DE1 I can acknowledge, process, and respond appropriately to others' comments and perspectives.

DE4 I can work respectfully with all members of my community and support the needs of others.

Understandings: Students will understand that…

- Comprehensive equine health management encompasses not only disease prevention and treatment but also includes daily care practices, nutritional management, and mental well-being.
- Preventative health care is crucial for maintaining the long-term health and performance of horses, including regular vaccinations, deworming, dental care, and hoof care.
- Effective equine managers must develop keen observation skills to detect early signs of illness or distress in horses, facilitating timely intervention.
- Managing equine health involves integrating knowledge of veterinary medicine, nutrition, psychology, and facility management to create optimal living conditions.

Essential Questions:

- What are the key components of effective equine health management?
- How do daily care practices impact the overall health and well-being of a horse?
- What preventive measures can be taken to protect horses from common diseases and injuries?
- How can equine caretakers identify and address early signs of health issues in horses?
- What role does the environment play in the health and management of equine populations?

Students will know…

- Key indicators of health in horses, including vital signs like temperature, pulse, and respiration rates, and what these indicators can reveal about a horse's health.
- Symptoms, causes, and preventive strategies for common equine diseases and ailments such as colic, laminitis, and respiratory infections.
- The role of nutrition in maintaining equine health and how to formulate diets that meet the specific needs of individual horses.
- How to perform routine care procedures such as hoof care, dental care, grooming, and administering medications.
- Steps to take in emergency situations, including how to assess

Students will be able to…

- Conduct routine health checks to assess the well-being of horses and recognize signs of potential health issues.
- Design and implement a comprehensive preventive health care program that includes vaccination schedules, parasite control and regular veterinary check-ups.
- Develop and manage feeding plans that meet the nutritional needs of horses at different stages of life and activity levels.
- Safely administer basic treatments such as vaccinations, dewormers, and first aid.
- Create and execute management plans that consider the housing, health, and welfare needs of horses in various settings.

the situation, provide first aid, and when to call a veterinarian.	• Effectively communicate health care and management plans to horse owners, trainers, and other stakeholders in the equine industry.

Key Vocabulary:
anthelmintic, biomechanics, body condition scoring (BCS), colic, cribbing, deworming, endoscope, equine metabolic syndrome (EMS), farrier, fecal egg count (FEC), float, founder, hoof abscess, laminitis, navicular disease, pastern, probiotics, quarantine, strangles, tack, thrush, vaccination, withers

Assessment Evidence

Performance Tasks: *Interim:* Perform a fundamental health assessment of an equine animal recording temperature, pulse, respiration, comprehensive history and observations. **AA3, TI2, DE1** *Summative:* Create a health care management plan for an equine animal throughout its lifecycle including routine maintenance and vaccination schedules. **TI1, AA1, TCC3, TCC4** *Interim:* Practice first aid, and emergency procedures on equine animals. **DE4, AA3, TCC1**	**Other Evidence:** *Classwork:* Observe industry professionals perform routine dental procedures to maintain animal health and wellness. **CCE1**

Learning Plan

- Students will collect health vital signs including temperature, pulse and respiration. **AA3, TI2, DE1**
- Students will identify proper vaccine protocols for equine animals throughout their lifecycle. **TI1, AA1, TCC3, TCC4**
- Students will practice first aid and emergency procedures in response to equine animal emergencies. **DE4, AA3, TCC1**

Teacher Resources:
Teacher Created Resources