

Equine Science, Advanced

8094 36 weeks

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Course Description

Suggested Grade Level: 10 or 11 or 12

Prerequisites: 8080

This course focuses on equine nutrition, handling and training techniques, grooming and foot care, anatomy and reproduction, transportation and stable management, as well as required safety procedures and protocols used in the equine industry. Participation in FFA activities, leadership development events (LDEs), and career development events (CDEs) is encouraged.

As noted in [Superintendent's Memo #058-17 \(2-28-2017\)](#), this Career and Technical Education (CTE) course must maintain a maximum pupil-to-teacher ratio of 20 students to one teacher, due to safety regulations. The 2016-2018 biennial budget waiver of the teacher-to-pupil ratio staffing requirement does not apply.

Task Essentials Table

| 8094 | Tasks/Competencies |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Identify the role of supervised agricultural experiences (SAEs) in agricultural education. |
| <input checked="" type="checkbox"/> | Participate in an SAE. |
| <input checked="" type="checkbox"/> | Identify the benefits and responsibilities of FFA membership. |
| <input checked="" type="checkbox"/> | Describe leadership characteristics and opportunities as they relate to agriculture and FFA. |
| <input type="checkbox"/> | Apply for an FFA degree and/or an agricultural proficiency award. |
| <input checked="" type="checkbox"/> | Demonstrate equine management techniques that ensure animal and handler welfare. |
| <input checked="" type="checkbox"/> | Demonstrate handling a horse. |

| | |
|----------------------------------|---|
| <input checked="" type="radio"/> | Demonstrate haltering a horse. |
| <input checked="" type="radio"/> | Demonstrate tying a horse for grooming. |
| <input checked="" type="radio"/> | Demonstrate grooming techniques. |
| <input type="radio"/> | Teach a horse to lunge. |
| <input checked="" type="radio"/> | Use voice commands. |
| <input checked="" type="radio"/> | Teach round pen techniques. |
| <input checked="" type="radio"/> | Define terms associated with basic first aid. |
| <input checked="" type="radio"/> | Take vital signs. |
| <input checked="" type="radio"/> | List items needed in a first-aid kit. |
| <input checked="" type="radio"/> | Differentiate between critical and non-critical injuries and illnesses. |
| <input checked="" type="radio"/> | Explain basic care procedures for a horse during illness or injury. |
| <input checked="" type="radio"/> | Explain how to administer injections. |
| <input checked="" type="radio"/> | Define various classes of drugs used for horse health and disease prevention. |
| <input checked="" type="radio"/> | Research common equine diseases. |
| <input checked="" type="radio"/> | Demonstrate techniques for common care procedures. |
| <input type="radio"/> | Demonstrate how to care for the hoof. |
| <input checked="" type="radio"/> | Explain how to detect lameness. |
| <input checked="" type="radio"/> | List guidelines for effective shoeing. |
| <input checked="" type="radio"/> | Explain how the digestive system supplies the horse's nutritional needs. |
| <input checked="" type="radio"/> | Explain critical factors to consider when determining a horse's nutritional requirements. |
| <input checked="" type="radio"/> | Describe factors to consider when selecting feeds. |
| <input checked="" type="radio"/> | Evaluate a commercial horse feed. |
| <input checked="" type="radio"/> | Summarize the potential effects, positive and negative, of compliance or noncompliance with feeding directions on a feed label. |
| <input checked="" type="radio"/> | Demonstrate how to balance a feed ration. |
| <input checked="" type="radio"/> | Select animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production. |

| | |
|---|---|
| + | Review the terms associated with equine reproduction. |
| + | Review the female reproductive system. |
| + | Review the male reproductive system. |
| + | Describe the influences of hormone secretions in the estrus cycle. |
| + | List factors affecting reproductive efficiency or infertility. |
| + | Explain management practices for broodmares. |
| + | Explain methods of breeding. |
| + | Identify methods for detecting heat and pregnancy in a mare. |
| + | Determine the probability of a given trait in the offspring of select breeding animals. |
| + | Identify factors relating to the care of a mare during gestation. |
| + | Explain causes and preventions of equine abortion. |
| + | Explain the foaling process. |
| + | Explain management practices when caring for a mare and foal from birth until weaning. |
| + | Describe how to care for a colt or stallion after being gelded. |
| + | Evaluate horse conformation. |
| + | Evaluate the balance and quality of a horse. |
| + | Evaluate the structural correctness of a horse. |
| + | Evaluate a horse, according to breed and sex characteristics. |
| + | Evaluate horse muscling. |
| + | Explain types and classes of horses and how to evaluate a horse in each. |
| + | Review procedures for transporting horses. |
| + | Explain factors in transporting a horse. |
| + | Demonstrate skills necessary for pasture management. |
| + | Prepare a facility plan. |
| + | Demonstrate skills necessary for stable management. |
| + | Evaluate a scenario and present recommendations. |

Note: Competencies 39-43 have been added to ensure compliance with federal legislation: National FFA Organization's Federal Charter Amendments Act (Public Law 116-7, <https://www.congress.gov/116/plaws/publ7/PLAW-116publ7.pdf>). All inquiries may be sent to cte@doe.virginia.gov. Students are provided opportunities for leadership, personal growth, and career success. Instruction is delivered through three major components: classroom and laboratory instruction, supervised agricultural experience (SAE) program, and student leadership (FFA).

Curriculum Framework

Task Number 39

Identify the role of supervised agricultural experiences (SAEs) in agricultural education.

Definition

Identification should include

- defining an SAE program as *an opportunity for students to consider multiple careers and occupations in the agriculture, food, and natural resources (AFNR) industries, learn expected workplace behavior, develop specific skills within an industry, and apply academic and occupational skills in the workplace or a simulated workplace environment*
- researching the Foundational SAE
 - career exploration and planning
 - personal financial planning and management
 - workplace safety
 - employability skills for college and career readiness
 - agricultural literacy
- researching the Immersion SAE
 - entrepreneurship/ownership
 - placement/internships
 - research (experimental, analytical, invention)
 - school business enterprises
 - service learning
- developing a plan to participate in an SAE, based on personal and career goals
- researching available awards and degrees, based on SAE participation.

Teacher resource: [SAE Resources](#), National Council for Agricultural Education

Process/Skill Questions

- What are examples of SAEs related to this course and in the AFNR industries?
- Where can a copy of the Virginia SAE Record Book be found?
- What is an Immersion SAE?
- How does a placement/internship SAE differ from an ownership/entrepreneurship SAE?
- How does an SAE provide relevant work experience and contribute to the development of critical thinking skills?
- How is the SAE an extended individualized instructional component of a student's Career Plan of Study?
- How can an SAE be used to provide evidence of student growth and participation in authentic, work-related tasks?
- What are the four types of SAEs?
- What are the advantages of participating in work-based learning experiences and projects?
- How does one choose an appropriate SAE in which to participate?

Task Number 40

Participate in an SAE.

Definition

Participation should include

- developing, completing, or continuing a plan to participate in an SAE as a work-based learning experience, based on personal and career goals
- documenting experience, connections, positions held, and competencies attained, using the *Virginia SAE Record Book*
- researching available awards and degrees, based on SAE participation.

Teacher resources:

[FFA SAE](#)

[The Agricultural Experience Tracker](#)

[Virginia SAE Record Book](#)

Process/Skill Questions

- What are the advantages of participating in work-based learning experiences and projects?
- How do SAEs help prepare students for the workforce?
- What are some examples of SAEs in AFNR?

Exploring Leadership Opportunities through FFA

Task Number 41

Identify the benefits and responsibilities of FFA membership.

Definition

Identification should include

- benefits
 - listing opportunities to participate in community improvement projects and career development events (CDEs) and leadership development events (LDEs)
 - exploring leadership development opportunities
- responsibilities
 - researching the responsibilities of FFA officers, committees, and members
 - locating resources that guide participation in FFA activities
 - explaining the FFA Creed, Motto, Salute, and mission statement
 - explaining the meaning of the FFA emblem, colors, and symbols
 - explaining significant events and the history of the organization.

Process/Skill Questions

- How does one become an FFA member?
- What is the FFA's mission and how does it accomplish its mission?
- What are the benefits and responsibilities of FFA membership?
- What five FFA activities are available through the local chapter?
- What are some significant events in FFA history? How have these events shaped membership over time?
- What is the FFA program of activities (POA), and how is it used?

Task Number 42

Describe leadership characteristics and opportunities as they relate to agriculture and FFA.

Definition

Description should include

- examples of successful leaders
- types of leadership
 - autocratic
 - participative
 - laissez-faire
 - servant
 - followership
- positive leadership qualities and traits of successful leaders
- opportunities for participating in leadership activities in FFA
- demonstrating methods for conducting an effective meeting.

Process/Skill Questions

- Who are some successful leaders in the agriculture industry?
- What qualities make a successful leader?
- What are leadership traits?
- What is the difference between positive and negative leadership?

Task Number 43

Apply for an FFA degree and/or an agricultural proficiency award.

Definition

Application should include

- identifying types of FFA degrees
 - Greenhand
 - Chapter
 - State
 - American
- identifying proficiency award areas
 - entrepreneurship
 - placement
 - combined
 - agriscience research
- exploring CDEs and LDEs related to this course
- identifying all SAE criteria to be eligible for the award
- identifying the type of award
- applying for an FFA award.

Teacher resource: [FFA Agricultural Proficiency Awards](#)

Process/Skill Questions

- Where are the awards and their application criteria located?
- What are the benefits of winning an FFA award?
- What are the benefits and requirements of an FFA degree?
- What FFA awards are available?
- How does the FFA degree program reward FFA members in all phases of leadership, skills, and occupational development?
- What is the highest degree that can be conferred upon an FFA member at the national level?
- What are the requirements for a Greenhand FFA degree?

Handling and Grooming a Horse

Task Number 44

Demonstrate equine management techniques that ensure animal and handler welfare.

Definition

Demonstration should include

- using all safety procedures and guidelines, including wearing proper clothing and personal protective equipment (PPE)
- stopping to reevaluate one's actions as needed to prevent the development or escalation of potentially dangerous situations
- designing a program that ensures the welfare of the animal and prevents abuse
- implementing safety procedures, plans, and protocols for working with horses based on behavior and responses.

Process/Skill Questions

- Why is it important to understand horse behavior and how it relates to safety procedures and protocols?

Task Number 45

Demonstrate handling a horse.

Definition

Demonstration should include

- using all safety procedures and guidelines, including wearing proper clothing and PPE
- describing the steps to take when approaching a horse, including a young horse
- describing the sensitive areas of a horse
- describing a horse's senses
- describing a horse's body language (e.g., involving ears, eyes, and tail).

Process/Skill Questions

- How do a horse's senses affect safe handling practices?
- How is a horse's vision different from a human's vision?

Task Number 46

Demonstrate haltering a horse.

Definition

Demonstration should include using all safety procedures and guidelines, including approaching the horse on the near (left) side (halters are designed to be buckled on the left). Demonstration should include the following steps:

- Ensure the halter is unbuckled or unsnapped and the lead rope is attached.
- Stand on the left side of the horse, pass the end of the lead rope under the neck with the left hand, put the right hand over the horse's neck and take the lead rope from the left hand.
- With the rope around the horse's neck, use the right hand to catch both ends of rope so the horse cannot wander off during the process.
- Position the loop to pass the halter strap to the right hand in the same manner as with the rope.
- Hold both the rope and the halter strap in the left hand, with an arm over the horse's neck and the halter buckle in the right hand.
- With hands on either side of the horse's head, position the noseband so the horse's nose will slide easily into it and raise the halter into position.
- Bring the halter strap over the horse's head, right behind the horse's ears, and fasten the buckle, keeping hold of the rope just in case the horse decides to break away before finishing.
- Make sure the halter fits properly and is neither too loose nor too tight. The noseband should lie two fingers below the cheekbone and one should be able to fit two fingers between the horse and the noseband.
- Remove the loop of rope from around the horse's neck.

Process/Skill Questions

- Why would a halter be left on a horse in a pasture?
 - What types of halters would be suitable for use during turnout?
 - How would one explain putting on a halter to someone who knows nothing about a horse?
-

Task Number 47

Demonstrate tying a horse for grooming.

Definition

Demonstration should include

- using all safety procedures and guidelines
- using the proper knots for tying and restraining a horse
- considering location (e.g., proximity to other horses, tree limbs, brush)
- avoiding tying below the level of the horse's withers
- avoiding entanglement (e.g., using appropriate length of lead rope)
- using the halter rope, not the bridle reins
- tying to a strong and secure object.

Teacher resource: [Horse Safety Guidelines](#) on the University of New Hampshire Extension website

Process/Skill Questions

- When would one use the different methods of tying knots?
 - How does properly tying a horse promote the safety of the horse and human?
 - What are possible consequences of not tying a horse correctly?
-

Task Number 48

Demonstrate grooming techniques.

Definition

Demonstration should include

- using all safety procedures and guidelines
- brushing
- washing
- grooming mane and tail
- trimming.

Process/Skill Questions

- How would one groom a horse that was just brought back from the field?
 - What is the purpose of grooming a horse? What are some additional reasons for grooming, other than cleanliness?
-

Task Number 49

Teach a horse to lunge.

Definition

Teaching a horse to lunge should include

- using all safety procedures and guidelines
- having the correct equipment
 - lunge line
 - lunging cavesson
 - lunge whip
 - leather or suede gloves
- holding the lunge line
- positioning oneself in the circle
- using the lunge whip
- performing lunge work in a circle (round pen enclosure)
- using the lunge whip to teach the horse to trot

- practicing halting
- reinforcing patterns.

Process/Skill Questions

- What is the purpose of teaching a horse to lunge?
 - What purpose does the lunge whip serve?
 - Why is it essential to be able to throw the lead rope over and around any part of the horse's body and have the horse stand still and relax?
-

Task Number 50

Use voice commands.

Definition

Using voice commands should include an explanation of simple words used to convey a message to the horse. Common horse-training voice commands include

- *walk*
- *trot*
- *canter*
- *gallop*
- *back*
- *easy*
- *stand*
- *wait*
- *over*
- *quit.*

Using voice commands should also include making clucking or smooching sounds.

Process/Skill Questions

- What are the most common voice commands?
 - Why is it important for a horse to understand voice commands?
-

Task Number 51

Teach round pen techniques.

Definition

Teaching round pen techniques should include

- using all safety procedures and guidelines
- exercises to get the horse to move its feet forwards and backwards, left and right, and with the forequarters, hindquarters, or both simultaneously
- fundamental groundwork
 - lead exercises
 - touching exercises
 - yielding to physical aids (direct pressure)
 - yielding to driving aids (indirect pressure)
 - circle work.

Process/Skill Questions

- What is the goal of groundwork?
 - How does groundwork challenge a horse physically and mentally?
 - How does groundwork help a horse overcome fear?
 - Why are lead exercises important?
 - How does circle work influence a horse's behavior?
-
-

Performing Basic Care Procedures

Task Number 52

Define terms associated with basic first aid.

Definition

Definition should include terms for

- types of wounds
 - *scrape*
 - *abrasion*
 - *laceration*
 - *puncture wounds*
- types of bandages and dressings associated with specific wounds
 - *occlusive*
 - *non-adherent*
 - *woven gauze*
 - *non-woven gauze.*

Process/Skill Questions

- What are different ways that a horse might become wounded?
- How do wounds differ?
- What items should be assembled to create an equine first-aid kit?
- What are the differences between woven and non-woven gauze?
- Why would one select to use non-woven over woven gauze?
- Why is it important to keep a wound moist?

Task Number 53

Take vital signs.

Definition

Taking vital signs should include

- using all safety procedures and guidelines
- explaining normal ranges
 - temperature
 - pulse
 - respiration
 - gut sounds
 - skin test
 - mucous membranes
 - capillary refill time.

Process/Skill Questions

- What temperature is considered a fever in a horse?
- What does it mean if a horse's capillary refill time is slow?
- What generally happens to a horse's vital signs when a horse is sick?

Task Number 54

List items needed in a first-aid kit.

Definition

List should include

- absorbent cotton
- gauze rolls
- non-stick dressings
- flexible wrap
- gauze sponges
- adhesive tape

- thermometer
- stethoscope
- bandage scissors
- duct tape
- petroleum jelly
- wound ointment
- bandage materials (e.g., sheet cotton, pillow wraps, track wraps, flannel wraps)
- antibacterial soap
- rubbing alcohol
- elastic bandage
- ice pack
- saline solution
- eye wash
- flashlight
- latex gloves
- tourniquet
- poultice
- phenylbutazone
- Banamine
- Epsom salt (i.e., magnesium sulfate).

Process/Skill Questions

- When should a tourniquet be used?
- What should be applied to a thermometer before using it?
- What are the common uses of non-stick dressings?
- What differentiates bandage scissors from regular scissors?

Task Number 55

Differentiate between critical and non-critical injuries and illnesses.

Definition

Differentiation should include

- explaining factors that define a wound as critical (e.g., puncture wound, wound over a joint, deep wound, arterial or venous bleeding, debris remaining in wound)
- describing non-critical wounds (e.g., scrapes, bruises, abrasions).

Process/Skill Questions

- What should be done if blood is spurting from a wound?
- What complications can arise from a puncture wound?
- What complications can arise if a wound occurs on or near a joint?
- What are the differences between abrasions, lacerations, and puncture wounds? What are possible complications if a wound is not treated properly?

Task Number 56

Explain basic care procedures for a horse during illness or injury.

Definition

Explanation should include

- describing procedures for providing basic wound treatment/care
- listing the uses of different types of bandages (e.g., pressure bandage, stable bandage, hoof wrap) and how they are applied
- describing how to apply and administer medication
- contacting a veterinarian when necessary.

Process/Skill Questions

- What should be done if blood seeps through a pressure bandage that was previously applied?
- What symptoms are considered serious and potentially life-threatening, requiring the attention of a veterinarian?
- What can happen if a bandage is applied incorrectly?

Task Number 57

Explain how to administer injections.

Definition

Explanation should include

- describing how to fill syringes in preparation for injections
- identifying intramuscular, intravenous, and subcutaneous injection sites
- describing how to administer intramuscular, intravenous, and subcutaneous injections.

Process/Skill Questions

- What happens if an intravenous injection is administered into the carotid artery instead of the jugular vein?
- What should be done if an injection needs to be repeated—use the same needle or use a new one?
- How should needles be discarded?

Task Number 58

Define various classes of drugs used for horse health and disease prevention.

Definition

Definition should include

- anthelmintics
- analgesics
- tranquilizers
- non-steroidal anti-inflammatory drugs (NSAIDs)
- corticosteroids
- antiseptics
- antibiotics.

Process/Skill Questions

- What are some common tranquilizers used with horses?
- Why is it important to understand antibiotic use, issues surrounding antibiotic resistance, and excessive and inappropriate use of antibiotics? Explain.
- Why is it critical to consult with a veterinarian regularly to develop an effective parasite control program?
- Why is it important to rotate chemical groups regularly to manage parasites? Explain.

Task Number 59

Research common equine diseases.

Definition

Research should include the causes, methods of transmission, symptoms, treatments, and prevention of common diseases and conditions.

Process/Skill Questions

- Which diseases have available vaccinations?
- Which vaccinations are not very effective in the prevention of disease? Why?
- Which diseases are caused by bacteria, and which are caused by viruses?
- Which diseases can be fatal?
- What are the regulations for transporting a horse or participating in an equine event in relation to the Coggins test?
- What types of colic affect horses?
- What are the types of disease reservoirs?

Task Number 60

Demonstrate techniques for common care procedures.

Definition

Demonstration should include techniques for

- checking vital signs
 - temperature
 - pulse
 - respiration
- monitoring for signs of illness
 - lack of appetite
 - diarrhea
 - coughing
 - sneezing
 - discharge (e.g., eyes, nose)
 - lameness
 - reluctance to move
- examining a wound
- vaccinating a horse
- controlling parasites (e.g., deworming a horse, internal, external)
- administering or applying medication
- providing dental care
- grooming (e.g., daily brushing, currying, hoof care).

Demonstration should also include following all safety procedures and guidelines.

Process/Skill Questions

- Why should gloves be worn when administering medications? What are possible consequences of not wearing gloves?
 - What are the methods of administering medication to a horse?
 - Why is grooming an important part of daily maintenance for horses?
 - Why is hoof care an important part of the daily grooming routine?
-
-

Performing Foot Care

Task Number 61

Demonstrate how to care for the hoof.

Definition

Demonstration should include techniques for

- cleaning
- inspecting
- maintaining sufficient moisture
- trimming
- correcting minor imperfections.

Demonstration should also include following all safety procedures and guidelines.

Process/Skill Questions

- What should one look for when inspecting a hoof?
- What are common hoof imperfections and how are they corrected?
- What tools are used to perform foot care?

Task Number 62

Explain how to detect lameness.

Definition

Explanation should include matching the suspected areas of lameness to the correct indications.

Process/Skill Questions

- What does a head nod at the trot indicate?
- What are the signs of rear leg lameness?
- How can trotting the horse in circles help determine where a horse is lame?
- How can a horse owner use the detection of heat, swelling, and the horse's response to touch to determine areas of lameness?

Task Number 63

List guidelines for effective shoeing.

Definition

List should include

- considering the preparation of the hoof for trimming and/or shoeing
- identifying common faults in the preparation of the hoof
- removing old shoes
- trimming the feet
- achieving foot levelness
- shaping the shoe to fit the hoof
- nailing the shoe in place.

Process/Skill Questions

- How can it be determined if a farrier has done a good job of trimming and shoeing?
- What are the dangers of cleaning, trimming, or shoeing a hoof incorrectly?
- What are the basic steps involved in shoeing a horse?

Managing Horse Nutrition

Task Number 64

Explain how the digestive system supplies the horse's nutritional needs.

Definition

Explanation should include

- comparing monogastric, ruminant, and cecum digestive systems
- identifying the roles of the small and large intestine in the digestive process
- identifying the role of the cecum in the digestive process
- describing the functions of the major nutrients
- describing symptoms of nutrient deficiencies related to the digestive process.

Process/Skill Questions

- What role does the cecum play in the digestive process?
- What are the differences between foregut and hindgut digestion?
- What are some digestive problems common to horses? How do various digestive issues result in nutrient deficiencies?

Task Number 65

Explain critical factors to consider when determining a horse's nutritional requirements.

Definition

Explanation should include

- determining the age, size, and use of a horse
- determining the daily nutritional requirements of a horse
- identifying palatable, digestible, and easily obtained feedstuffs
- identifying feedstuffs that provide the correct amount of nutrients
- supplemental feeds (e.g., vitamins and minerals)

- maintaining balanced rations
- describing a feeding program for a horse.

Process/Skill Questions

- What is a balanced ration?
- How would the ration of a horse in a pasture differ from that of a horse in a stall?
- How would the ration of a young, growing horse differ from that of an older, mature horse?

Task Number 66

Describe factors to consider when selecting feeds.

Definition

Description should include

- distinguishing among classifications of feeds
- identifying the nutrient concentration among different feedstuffs
- determining the nutrient requirements of the horse and the correct amount to feed
- determining feedstuffs that are economical and easily obtained.

Process/Skill Questions

- Why are roughages an important part of the horse's diet?
- What are some important questions to ask feed consultants about their products?
- How is the nutrient composition of various feed determined?
- How would one add minerals to a horse's diet?

Task Number 67

Evaluate a commercial horse feed.

Definition

Evaluation should include examining the label to determine the following:

- Brand or product name
- Commercial feed class
 - Textured concentrates (e.g., sweet feed)
 - Processed concentrates (e.g., pelleted or extruded)
 - Complete feeds (i.e., designed to feed as the sole ration and high in fiber)
 - Supplements (e.g., minerals and/or vitamins, fat, protein)
- Purpose statement (indicates the classes of horses)
 - Mature non-working horses
 - Growing foals
- Guaranteed analysis (amount of specific nutrients in the feed)

- Crude protein (CP)
- Crude fiber and fat
- Maximum and minimum percentages of calcium (Ca)
- Minimum percent of phosphorous (P)
- Additional minerals (e.g., copper [Cu], zinc [Zn], and selenium [Se] reported in parts per million [ppm])
- Vitamin A (international units per lb [IU/lb])
- Essential amino acids (e.g., lysine, methionine, and threonine)
- List of ingredients
 - Grain
 - Grain byproducts
 - Fiber sources
 - Sources of vitamins and minerals
 - Additives
- Name and address of the manufacturer
- Quantity statement
- Feed directions.

Teacher Resource: [Reading a Commercial Horse Feed Tag](#), University of Tennessee Institute of Agriculture

Process/Skill Questions

- Why is the purpose statement on a feed tag important when evaluating a commercial feed?
- What are the differences between processed concentrates and textured concentrates?
- What information is required in the guaranteed analysis and how is this information helpful when evaluating a commercial feed?

Task Number 68

Summarize the potential effects, positive and negative, of compliance or noncompliance with feeding directions on a feed label.

Definition

Summary should include how label noncompliance affects the horse.

Process/Skill Questions

- What happens to a horse that does not receive a ration supplying the required recommended daily nutrients?
- What happens to a horse receiving more digestible energy (DE) than the daily requirement?

Task Number 69

Demonstrate how to balance a feed ration.

Definition

Demonstration should include

- weighing the horse
- calculating the total daily requirements (forage and concentrate) (i.e., $\text{body weight}/100 \times 2.5 = \text{total daily ration}$)
- determining the weight goal
 - maintenance diet (e.g., if the horse's ideal weight is 300kg, and the horse weighs 300kg, feed 2.5% of 300kg)
 - reduction diet (e.g., if the horse's ideal weight is 300kg, and the horse weighs 400kg, feed 2.5% of 300kg, not 2.5% of 400kg)
 - increase diet (e.g., if the horse's ideal weight is 400kg, and the horse weighs 300kg, feed 2.5% of 400kg, not 2.5% of 300kg)
- controlling the energy level in forage (e.g., grass, haylage, hay, oat straw) and the type of grass (e.g., rye, timothy, cocksfoot or orchard grass) have varying amounts of digestible energy (DE)
- choosing the type of energy to suit your horse (e.g., slow-release energy [fiber and oil] vs. fast-release energy [starch in oats and barley])
- adjusting food intake as needed (making adjustments gradually)
- scheduling feedings at the appropriate times
- consulting a veterinarian if needed.

Demonstration should also include taking into consideration class, health, digestive system, parasite control, dental condition, percentage of dietary crude protein needs, and the DE needs of the horse to determine the type and amount of

- carbohydrates
- protein
- fats
- vitamins
- minerals
- chlorine
- beta carotene
- amino acids (e.g., lysine, methionine, tryptophan, and threonine)

and always giving a horse access to plenty of fresh and clean water.

Process/Skill Questions

- Why is it important to ensure the ration is balanced specifically for the horse being fed?
- Why is it important to feed a horse plenty of roughage and grain in small amounts?
- Why is it important to change feed and feed schedules gradually?
- How many gallons of water does a horse need per day? Why is it important for a horse to have access to plenty of clean, fresh water?

Task Number 70

Select animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production.

Definition

Selection should include analysis of nutritional requirements and ration for maximum nutritional value.

Process/Skill Questions

- What does it mean to use rations for maximum nutrition?
- What could be considered optimal economic production in horses?

Understanding Equine Reproduction

Task Number 71

Review the terms associated with equine reproduction.

Definition

Review should include terms such as

- *brood mare*
- *sire*
- *dam*
- *stallion*
- *colt*
- *foal*
- *filly*
- *gelding*
- *pedigree*
- *genotype*
- *phenotype*
- *progeny*
- *weanling*
- *deoxyribonucleic acid (DNA)*
- *dystocia*
- *fertilization*
- *gene*
- *maiden*
- *estrus*
- *anestrus*
- *ovulation*
- *gestation*
- *placenta*
- *parturition*
- *enema*

- *artificial insemination*
- *barren*
- *colostrum*
- *lactation.*

Process/Skill Questions

- What is *dystocia*?
- When does anestrus occur in the mare?
- Why is it important for a newborn foal to receive colostrum?

Task Number 72

Review the female reproductive system.

Definition

Review should include

- identifying parts of the reproductive system
- explaining the role(s) of each part of the female reproductive tract
- explaining the parts of the estrous cycle, including the influence of season on it
- describing the sexual maturity of the reproductive tract.

Process/Skill Questions

- When is puberty generally reached in a mare?
- What is the primary sex organ of a mare?
- What is a seasonally polyestrous animal?
- What is the anestrus period?
- What is the difference between estrous and estrus?
- What is another term for the oviducts?

Task Number 73

Review the male reproductive system.

Definition

Review should include

- identifying parts of the reproductive system
- explaining the role(s) of each part of the male reproductive tract
- describing the sexual maturity of the reproductive tract.

Process/Skill Questions

- What is puberty?
- When is puberty generally reached in a stallion?
- What structure is responsible for spermatozoa maturation and storage?

Task Number 74

Describe the influences of hormone secretions in the estrus cycle.

Definition

Description should include the influences of the following on the estrous cycle:

- Oxytocin
- Relaxin
- Prostaglandin
- Progesterone
- Estrogen
- Prolactin
- Luteinizing hormone
- Follicle-stimulating hormone
- Human chorionic gonadotropin (hCG)

Process/Skill Questions

- What is the role of the hormone progesterone in the mare?
- What hormone stimulates milk production?
- Where are reproductive hormones, such as estrogen, progesterone, and luteinizing hormone released from in the horse's body?
- Why is hCG used in mares?

Task Number 75

List factors affecting reproductive efficiency or infertility.

Definition

List should include

- semen evaluation
- general health of mare
- body condition score
- history of previous diseases
- normal hormonal activity
- normal reproductive anatomy.

Process/Skill Questions

- What is the recommended minimum age to breed a mare? What is the recommended minimum breeding age for a stallion?
- What factors influence sperm output and production?

Task Number 76

Explain management practices for broodmares.

Definition

Explanation should include

- normal breeding characteristics of mares
- average age of sexual maturity
- average age for breeding
- cycle and gestational length
- signs of estrus in a mare
- steps for breeding-season hygiene
- items to be recorded during breeding season
- conditions that prevent breeding on foal heat.

Process/Skill Questions

- When does estrus normally begin?
- What is the recommended minimum age to breed a horse?
- How long does estrus usually last?
- How soon after parturition can a mare be bred?
- What are four signs that a mare is in estrus?
- How many days is a mare's average gestation length?

Task Number 77

Explain methods of breeding.

Definition

Explanation should include

- artificial insemination
- pasture breeding
- in-hand breeding
- embryo transfer.

Process/Skill Questions

- What are the advantages and disadvantages of live cover breeding?
- What are the advantages and disadvantages of artificial insemination?
- When is best time in a mare's estrous cycle to breed her with fresh semen?

Task Number 78

Identify methods for detecting heat and pregnancy in a mare.

Definition

Identification should include

- rectal palpation
- ultrasound
- use of a teaser stallion.

Process/Skill Questions

- What are the advantages and disadvantages of rectal palpation and ultrasound pregnancy detection?
- How soon after mating can an ultrasound detect pregnancy?
- What are some required precautions that need to be taken when using a teaser stallion to detect heat in a mare?

Task Number 79

Determine the probability of a given trait in the offspring of select breeding animals.

Definition

Determination should include

- evaluation of the breeding animal
- probability of a given trait in their offspring
- difference between genotype and phenotype
- difference between recessive and dominant alleles
- difference between homozygous and heterozygous
- use of a Punnett square and the product rule to calculate the probability of two or more independent events occurring and predicting frequencies of fertilization events (e.g., for independent events X and Y, the probability [P] of them both occurring [X and Y] is P[X] multiplied by P[Y]).
- use of the sum rule to calculate the probability that any one of several events will occur (e.g., for mutually exclusive events X and Y, the probability [P] that one will occur [X or Y] is P[X] + P [Y]).

Teacher Resource: [Basic Horse Genetics](#), Alabama Cooperative Extension System

Process/Skill Questions

- What is the difference between a genotype and phenotype?
- What is a Punnett square?
- How can a Punnett square be used to predict the probability of an offspring having a particular genotype?
- What are the probabilities for F1 genotypes and phenotypes if a homozygous dominant brown horse is crossed with a heterozygous brown horse (tan is the recessive color)?

Caring for the Mare and Foal

Task Number 80

Identify factors relating to the care of a mare during gestation.

Definition

Identification should include

- nutritional requirements
- vaccinations
- deworming schedule
- exercise
- hoof care
- dental care.

Process/Skill Questions

- What does fescue toxicosis cause in a pregnant mare?
- What vaccinations should a pregnant mare receive? When should these be administered?

Task Number 81

Explain causes and preventions of equine abortion.

Definition

Explanation should include

- causes of abortion
 - poor nutrition
 - trauma
 - leptospirosis
 - placentitis
 - equine viral arteritis

- bacterial agents
- twinning in mares
- fescue toxicosis
- rhinopneumonitis
- pneumovagina
- preventions for abortion
 - Caslick's suture
 - separation of pregnant mares from non-pregnant horses
 - herpes vaccinations at five, seven, and nine months.

Process/Skill Questions

- What is the difference between equine abortion and stillbirth?
- What is one cause of twinning in horses?
- What vaccinations should be given at five, seven, and nine months of gestation to prevent equine abortion?
- How soon should pregnant mares be removed from endophyte-infected fescue prior to parturition?
- When should a pregnant mare's nutritional intake increase?

Task Number 82

Explain the foaling process.

Definition

Explanation should include

- listing indications of approaching parturition
- describing actions to take in the foaling process
- taking action based on foal presentation to correct certain situations and aid the process
- listing essential ways to offer assistance in the foaling process
- listing conditions requiring veterinarian assistance.

Process/Skill Questions

- What items should be included in a foaling kit?
- What are three signs that a mare is one week from foaling?
- What are indicators of a mare being in stage two of labor?
- How long should it take for a mare to pass the placenta after foaling?
- When are placental membranes expelled?
- What happens if the placental membranes are not expelled?
- When is veterinary assistance required?

Task Number 83

Explain management practices when caring for a mare and foal from birth until weaning.

Definition

Explanation should include describing how to care for a postpartum mare and a newborn foal.

Process/Skill Questions

- What dewormer should be administered to the mare on the day of foaling?
- Why would an enema be used on a foal?
- What is meconium?
- Why is it important for the foal's digestive tract to begin functioning immediately after birth?
- What is applied to the foal's navel following birth?
- When should the foal attempt to stand and nurse?
- Why is colostrum so important to the health of a foal?
- What is the typical weaning age of a foal?
- What methods are used to wean a foal?

Task Number 84

Describe how to care for a colt or stallion after being gelded.

Definition

Description should include an explanation of

- cleanliness and hygiene
 - incision care
 - fly control
 - stall/pasture
- observation of incision for
 - bleeding
 - abnormal drainage or discharge
 - excessive swelling
 - signs of infection
- follow-up care
 - daily cold water hosing
 - exercise
- complications
- symptoms requiring the immediate care of a veterinarian.

Process/Skill Questions

- What is an orchidectomy?
- Why are stallions castrated?
- Why is castration performed in horses with cryptorchidism?
- Why should colts be castrated before they reach the age of one?
- What are some signs of infection?
- What are possible reasons for a gelding to continue to exhibit stallion behavior?

Judging the Horse

Task Number 85

Evaluate horse conformation.

Definition

Evaluation should include defining *conformation* as

- the physical appearance of the horse due to the arrangement of muscle, bone, and other body tissue
- combination of muscle, skeletal soundness and symmetry
- a reliable predictor of athletic ability and soundness.

Evaluation should also include an explanation of how the proportions of and relationships between the horse's upper body and its parts can impact the horse's health, success in a given discipline, and how conformation is influenced by

- the skeletal system
- straightness of the legs
- breed-specific differences
- conformation faults and defects.

Teacher Resource: [Evaluating Conformation of Horses](#), University of Tennessee Agricultural Extension Service

Process/Skill Questions

- What is conformation?
- Why is skeletal structure important to understand when evaluating a horse's conformation?
- What are some breed-specific conformation differences?
- What are some conformation traits that can affect performance?
- What does it mean when a horse is sickle-hocked, post-legged, cow-hocked, or bow-legged? How might any of these affect the performance of the horse?
- Why is it important to have a thorough understanding of all parts of the horse, the function of each, and an evaluation system that allows for consistent, repetitious evaluation of horse conformation?

Task Number 86

Evaluate the balance and quality of a horse.

Definition

Evaluation should include an explanation of how balance refers to the even, smooth blending of all parts and muscling determined by the length of the neck, the back, and the croup. Quality refers to a horse that exhibits many of the ideal characteristics of a specific breed:

- When viewed from the side, the length of the shoulder, back and hip should all be equal.
- The horse's neck should be equal to or longer than the shoulder, back, and hip.
- The top of the neck should ideally be twice as long as the underside of the horse's neck (i.e., a 2:1 ratio).
- A horse's face should be equal to or shorter than the length of the horse's back, hip, and shoulder.
- The back of the horse should be shorter than its underline.
- The heart girth should equal the length from the underline to the ground.

Teacher Resource: [Judging Horses -- Conformation Classes](#), eXtension

Process/Skill Questions

- What is the ideal measurement of a horse's neck?
- Why is it important to be able to evaluate the balance and quality of a horse?

Task Number 87

Evaluate the structural correctness of a horse.

Definition

Evaluation should include

- horse's skeleton, or bone structure, which can predict how the horse will move (Like muscling, structure should be evaluated from the front, profile, and rear.)
- angle of the shoulder (i.e., The angle of the horse's shoulder should be approximately 45° since a shoulder angle of less than 45° results in a shorter stride as well as a longer back.)
- hoof angles (pastern conformation), which are crucial to the soundness and stride of a horse
 - long toe, short heel will create a long stride
 - short toe, long heel will create a short stride
- hip shape (e.g., square hips)
- throat latch
- head and neck size
- hoof and pastern (i.e., 45°)
- withers
- back
- legs
- top line
- hock placement.

Process/Skill Questions

- How is structural correctness related to the horse's athletic ability or usefulness?

Task Number 88

Evaluate a horse, according to breed and sex characteristics.

Definition

Evaluation should consider

- traits that are unique to the particular breed. (e.g., stock horses are different from Arabians, draft horses, society breeds)
- sex characteristics
 - masculinity (i.e., male traits such as prominence of jaw, heavy muscling, powerful appearance)
 - femininity (e.g., refinement in mares).

Process/Skill Questions

- What unique breed characteristics are found in Arabians?
- What are breed standards?
- How is the evaluation of both the width and depth of a horse's chest an important indicator for reproductive and athletic performance?

Task Number 89

Evaluate horse muscling.

Definition

Evaluation should take into consideration muscle volume (i.e., the overall amount of muscle, with definition or delineation referring to the separation of the different muscles, often referred to as "chiseling"). Evaluation should be done by

- viewing muscling from the front, the side or profile, and the rear
- focus on the chest or pectorals (the "V" that the front legs create) and the forearm when evaluating from the front
- focusing on the shoulder and forearm, loin, and hindquarter including the stifle
- evaluating from the rear, ensuring the horse is wider through the stifle than at the point of the hip and observing the inner and outer gaskin when evaluating from the profile view.

Process/Skill Questions

- How should one evaluate horse muscling?
- What are the characteristics of well-defined but not bunched muscling over the stifle and gaskin?
- What are the definitions of *parrot mouth*, *bench knees*, *swayback*, *goose-rumped*, *fistulous withers*?

Task Number 90

Explain types and classes of horses and how to evaluate a horse in each.

Definition

Explanation should include classifications according to size, weight, build, use, origin of breeding, color, temperament, and gait. Explanation should include the following:

- Size
 - Draft horses
 - Light horses
 - Ponies
- Temperament
 - Cold bloods
 - Hot bloods
 - Warmbloods
- Color
 - Pinto
 - Paint
 - Palomino
 - Appaloosa
 - Buckskin
- Gait
 - Tennessee Walking Horse
 - Missouri Fox Trotter
 - Saddlebred
 - Icelandic
 - Peruvian Paso
- Usage or discipline
 - Stock
 - Driving
 - All purpose

Process/Skill Questions

- How are horses classified?
- Why can a horse be in several classifications?
- What are the differences between cold bloods and hot bloods?
- What are the color classifications?
- What are the size classifications?

Transporting the Horse

Task Number 91

Review procedures for transporting horses.

Definition

Review should include

- listing precautions to take before transporting a horse
- identifying methods by which a horse can be transported
- considering destination
- considering length of transport
- preparing for transport
- understanding loading procedures/loading density
- considering feeding, watering, ventilation, temperature, partitions
- scheduling in-transit inspections and rest periods
- listing unloading procedures
- explaining responsibilities and legalities
- describing emergency euthanasia.

Process/Skill Questions

- What are the advantages of a gooseneck trailer over a bumper-pull trailer?
- How should a nervous and excited horse be loaded?

Task Number 92

Explain factors in transporting a horse.

Definition

Explanation should include

- trailer maintenance
- equipment needed for hauling
- health requirements for interstate travel.

Process/Skill Questions

- What floor-covering material provides the safest environment for a horse?
- What types of health and vaccination records are typically required for interstate travel?

Managing the Stable

Task Number 93

Demonstrate skills necessary for pasture management.

Definition

Demonstration should include tasks related to

- pasture rotation and soil testing to determine the proper amounts of lime and fertilizer
- stocking rate of at least one acre of quality pasture per horse
- removal or breakup of manure
- removal of poisonous plants.

Process/Skill Questions

- How can one reduce pasture destruction by examining feeding, watering, and resting areas?
 - Why is it financially important to soil test pastures before liming or fertilizing?
 - How do endophytes affect a horse?
-

Task Number 94

Prepare a facility plan.

Definition

Preparation of a facility plan should include

- stall sizes
- characteristics of stall construction
- location of a barn and reasons for selecting the location
- storage space requirements
- requirements for feed and bedding.

Process/Skill Questions

- How is the size of a stall determined?
 - What are important factors to consider when selecting the location for a barn?
-

Task Number 95

Demonstrate skills necessary for stable management.

Definition

Demonstration should include

- keeping accurate records for each horse (e.g., deworming, farrier visits, vaccinations, injuries/surgeries)

- using veterinarian-approved deworming and vaccination schedules
- reducing stress by maintaining a regular feeding schedule
- maintaining safe and sanitary facilities.

Process/Skill Questions

- Why is it important to keep accurate records for each horse?
- What would be an appropriate care schedule for five horses being kept on a ten-acre pasture behind a house?

Task Number 96

Evaluate a scenario and present recommendations.

Definition

Evaluation should include examining a hypothetical scenario involving the management of horses using best management practice (BMPs) and making recommendations to solve problems in areas such as

- pasture management
 - improving/increasing year-round desirable vegetation to provide nutrition to horses
 - reducing weed populations in pastures
- land size requirements
- housing, space, and shelter
- fencing requirement
- feed and water requirements
- health care requirements
- manure management
- reproduction
- equine safety.

Process/Skill Questions

- What is the problem? What are its possible causes? What are possible solutions?
- What management strategies should one use to solve the problem?
- What additional short- and long-term measures should be taken to ensure the problem is prevented in the future?
- What additional course(s) of action should be taken?

SOL Correlation by Task

| | | |
|----|--|---|
| 39 | Identify the role of supervised agricultural experiences (SAEs) in agricultural education. | English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5 |
| 40 | Participate in an SAE. | English: 10.5, 10.8, 11.5, 11.8, 12.5, 12.8 |
| 41 | Identify the benefits and responsibilities of FFA membership. | English: 10.5, 10.6, 10.7, 10.8, 11.5, 11.6, 11.7, 11.8, 12.5, 12.6, 12.7, 12.8 |

| | | |
|----|---|---|
| 42 | Describe leadership characteristics and opportunities as they relate to agriculture and FFA. | English: 10.5, 11.5, 12.5 History and Social Science: VUS.8, VUS.9, VUS.10, VUS.11, WHIL.8, WHIL.10, WHIL.11 |
| 43 | Apply for an FFA degree and/or an agricultural proficiency award. | English: 10.5, 11.5, 12.5 |
| 44 | Demonstrate equine management techniques that ensure animal and handler welfare. | English: 10.1, 11.1, 12.1 |
| 45 | Demonstrate handling a horse. | English: 10.6, 11.6, 12.6 |
| 46 | Demonstrate haltering a horse. | |
| 47 | Demonstrate tying a horse for grooming. | |
| 48 | Demonstrate grooming techniques. | |
| 49 | Teach a horse to lunge. | |
| 50 | Use voice commands. | |
| 51 | Teach round pen techniques. | |
| 52 | Define terms associated with basic first aid. | English: 10.3, 11.3, 12.3 |
| 53 | Take vital signs. | English: 10.5, 11.5, 12.5 |
| 54 | List items needed in a first-aid kit. | English: 10.6, 11.6, 12.6 |
| 55 | Differentiate between critical and non-critical injuries and illnesses. | English: 10.5, 11.5, 12.5 |
| 56 | Explain basic care procedures for a horse during illness or injury. | English: 10.5, 11.5, 12.5 |
| 57 | Explain how to administer injections. | English: 10.5, 11.5, 12.5 |
| 58 | Define various classes of drugs used for horse health and disease prevention. | English: 10.3, 11.3, 12.3 |
| 59 | Research common equine diseases. | English: 10.8, 11.8, 12.8 |
| 60 | Demonstrate techniques for common care procedures. | |
| 61 | Demonstrate how to care for the hoof. | English: 10.5, 11.5, 12.5 |
| 62 | Explain how to detect lameness. | English: 10.5, 11.5, 12.5 |
| 63 | List guidelines for effective shoeing. | English: 10.5, 10.6, 11.5, 11.6, 12.5, 12.6 |
| 64 | Explain how the digestive system supplies the horse's nutritional needs. | English: 10.5, 11.5, 12.5 Science: BIO.4 |
| 65 | Explain critical factors to consider when determining a horse's nutritional requirements. | English: 10.5, 11.5, 12.5 |
| 66 | Describe factors to consider when selecting feeds. | English: 10.5, 11.5, 12.5 |
| 67 | Evaluate a commercial horse feed. | English: 10.5, 10.8, 11.5, 11.8, 12.5, 12.8 |
| 68 | Summarize the potential effects, positive and negative, of compliance or noncompliance with feeding directions on a feed label. | English: 10.5, 11.5, 12.5 |
| 69 | Demonstrate how to balance a feed ration. | English: 10.5, 11.5, 12.5 Mathematics: A.1, A.4 |
| 70 | Select animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production. | English: 10.5, 11.5, 12.5 |
| 71 | Review the terms associated with equine reproduction. | English: 10.5, 11.5, 12.5 |

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| | | Science: BIO.5 |
| 72 | Review the female reproductive system. | English: 10.5, 11.5, 12.5 Science: BIO.4 |
| 73 | Review the male reproductive system. | English: 10.5, 11.5, 12.5 Science: BIO.4 |
| 74 | Describe the influences of hormone secretions in the estrus cycle. | |
| 75 | List factors affecting reproductive efficiency or infertility. | English: 10.6, 11.6, 12.6 |
| 76 | Explain management practices for broodmares. | English: 10.5, 11.5, 12.5 |
| 77 | Explain methods of breeding. | English: 10.5, 11.5, 12.5 |
| 78 | Identify methods for detecting heat and pregnancy in a mare. | English: 10.5, 11.5, 12.5 |
| 79 | Determine the probability of a given trait in the offspring of select breeding animals. | English: 10.5, 11.5, 12.5 Mathematics: AFDA.6, PS.11*, PS.12* Science: BIO.5 |
| 80 | Identify factors relating to the care of a mare during gestation. | English: 10.5, 11.5, 12.5 |
| 81 | Explain causes and preventions of equine abortion. | English: 10.5, 11.5, 12.5 |
| 82 | Explain the foaling process. | English: 10.5, 11.5, 12.5 |
| 83 | Explain management practices when caring for a mare and foal from birth until weaning. | English: 10.5, 11.5, 12.5 |
| 84 | Describe how to care for a colt or stallion after being gelded. | English: 10.5, 11.5, 12.5 |
| 85 | Evaluate horse conformation. | English: 10.5, 11.5, 12.5 |
| 86 | Evaluate the balance and quality of a horse. | English: 10.5, 11.5, 12.5 |
| 87 | Evaluate the structural correctness of a horse. | English: 10.5, 11.5, 12.5 |
| 88 | Evaluate a horse, according to breed and sex characteristics. | English: 10.5, 11.5, 12.5 Science: BIO.5 |
| 89 | Evaluate horse muscling. | English: 10.5, 11.5, 12.5 |
| 90 | Explain types and classes of horses and how to evaluate a horse in each. | English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5 |
| 91 | Review procedures for transporting horses. | English: 10.5, 10.6, 11.5, 11.6, 12.5, 12.6 |
| 92 | Explain factors in transporting a horse. | English: 10.5, 11.5, 12.5 |
| 93 | Demonstrate skills necessary for pasture management. | |
| 94 | Prepare a facility plan. | |
| 95 | Demonstrate skills necessary for stable management. | English: 10.6, 11.6, 12.6 |
| 96 | Evaluate a scenario and present recommendations. | English: 10.5, 11.5, 12.5 |

Instructional Scenario

Scenario:

You are the manager of one of the premier showing and breeding barns in the United States. You are in charge

of the training/boarding barn and are also breeding and managing about twenty broodmares. Your mares are healthy and are about to start foaling and it is show season for all of your show horses. A group of clients who board and show out of your barn have just returned from a week-long show in Minnesota. You notice about ten days after your clients return from the show that two of the show horses have developed signs of fever, excessive salivation, and blister-like lesions on their dental pad, tongue, and coronary band. You are worried that a disease might be spreading through the barn.

Questions:

- What could be the problem?
- What are possible causes?
- What are possible solutions?
- What short- and long-term preventative practices could ensure the problem does not happen again?
- What additional best management practices need to be implemented, if any?

Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- Animal Systems Assessment
- College and Work Readiness Assessment (CWRA+)
- Customer Service Specialist (CSS) Examination
- Equine Management and Evaluation Examination
- Equine Science - Year Certification Examination
- National Career Readiness Certificate Assessment
- Small Animal Science and Technology Assessment
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: *A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.*

- Agricultural Business Fundamentals I (8022/36 weeks)
- Agricultural Business Management III (8026/36 weeks)
- Agricultural Business Operations II (8024/36 weeks)
- Biological Applications in Agriculture (8086/36 weeks)
- Biotechnology Applications in Agriculture (8087/36 weeks)
- Biotechnology Foundations in Agricultural and Environmental Science (8085/36 weeks)
- Equine Science (8080/36 weeks)
- Introduction to Animal Systems (8008/36 weeks)
- Livestock Production Management (8012/36 weeks)
- Small Animal Care I (8083/36 weeks)
- Small Animal Care II (8084/36 weeks)
- Veterinary Science I (8088/36 weeks, 140 hours)
- Veterinary Science II (8089/36 weeks, 140 hours)

| Career Cluster: Agriculture, Food and Natural Resources | |
|--|---|
| Pathway | Occupations |
| Agribusiness Systems | Agricultural Commodity Broker Agricultural Products Sales Representative Farm Products Purchasing Agent and Buyer Farm, Ranch Manager Farmer/Rancher Feed, Farm Supply Store Sales Manager Sales Manager |
| Animal Systems | Agricultural Products Sales Representative Animal Breeder, Husbandry Animal Geneticist Animal Nutritionist Animal Scientist Veterinarian Veterinary Technician |

| Career Cluster: Agriculture, Food and Natural Resources | |
|--|---|
| Pathway | Occupations |
| Environmental Service Systems | Agricultural Products Sales Representative Environmental Compliance Inspector Environmental Sampling and Analysis Technician Hazardous Materials Handler Secondary School Teacher Toxicologist |
| Food Products and Processing Systems | Biochemist Food Scientist |
| Natural Resources Systems | Microbiologist Outdoor Recreation Guide Park Manager Park Technician Range Technician Wildlife Manager |
| Power, Structural, and Technical Systems | Agricultural Engineer Agricultural Equipment Operator Agricultural Equipment Parts Manager Agricultural Equipment Parts Salesperson Machinist Parts Manager |

| Career Cluster: Education and Training | |
|---|---|
| Pathway | Occupations |
| Teaching and Training | Secondary School Teacher Teacher Assistant Training Consultant/Training Specialist |

| Career Cluster: Science, Technology, Engineering and Mathematics | |
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| Pathway | Occupations |
| Engineering and Technology | Agricultural Engineer Biomedical Engineer |
| Science and Mathematics | Animal Nutritionist Animal Scientist Biologist Chemist Microbiologists Research Chemist Secondary School Teacher Technical Writer Toxicologist Veterinarian Veterinary Assistant |