

# Equine Science

<b>Primary Career Cluster:</b>	Agriculture, Food, & Natural Resources
<b>Course Contact:</b>	<a href="mailto:CTE.Standards@tn.gov">CTE.Standards@tn.gov</a>
<b>Course Code(s):</b>	C18HXX
<b>Prerequisite(s):</b>	<i>Agriscience C18H19</i>
<b>Credit:</b>	1
<b>Grade Level:</b>	10-11-12
<b>Elective Focus Graduation Requirements:</b>	This course satisfies one of three credits required for an elective focus when taken in conjunction with other <i>Agriculture, Food, &amp; Natural Resource</i> .
<b>POS Concentrator:</b>	This course satisfies one out of two required courses to meet the Perkins V concentrator definition, when taken in sequence in the approved special program of study.
<b>Programs of Study and Sequence:</b>	This is an optional elective course to support a special program of study within the Agriculture, Food, and Natural Resources career cluster.
<b>Aligned Student Organization(s):</b>	FFA: <a href="http://www.tnffa.org">http://www.tnffa.org</a>
<b>Coordinating Work-Based Learning:</b>	All Agriculture students are encouraged to participate in a Supervised Agricultural Experience (SAE) program. In addition, teachers who hold an active WBL certificate may offer placement for credit when the requirements of the state board's WBL Framework and the Department's WBL Policy Guide are met. For information, visit <a href="https://www.tn.gov/content/tn/education/career-and-technical-education/work-based-learning.html">https://www.tn.gov/content/tn/education/career-and-technical-education/work-based-learning.html</a>
<b>Promoted Tennessee Student Industry Credentials:</b>	Credentials are aligned with postsecondary and employment opportunities and with the competencies and skills that students acquire through their selected program of study. For a listing of promoted student industry credentials, visit <a href="https://www.tn.gov/education/career-and-technical-education/student-industry-certification.html">https://www.tn.gov/education/career-and-technical-education/student-industry-certification.html</a>
<b>Teacher Endorsement(s):</b>	048, 150, 448, and 950
<b>Required Teacher Certifications/Training:</b>	None
<b>Teacher Resources:</b>	<a href="https://www.tn.gov/education/career-and-technical-education/career-clusters/cte-cluster-agriculture-food-natural-resources.html">https://www.tn.gov/education/career-and-technical-education/career-clusters/cte-cluster-agriculture-food-natural-resources.html</a> Best for All Central: <a href="https://bestforall.tnedu.gov/">https://bestforall.tnedu.gov/</a>

## Course-At-A-Glance

CTE courses provide students with an opportunity to develop specific academic, technical, and 21st century skills necessary to be successful in career and in life. In pursuit of ensuring every student in Tennessee achieves this level of success, we begin with rigorous course standards which feed into intentionally designed programs of study.

Students engage in industry relevant content through general education integration and experiences such as career & technical student organizations (CTSO) and work-based learning (WBL). Through these experiences, students are immersed with industry standard content and technology, solve industry-based problems, meaningfully interact with industry professionals and use/produce industry specific, informational texts.

### Using a Career and Technical Student Organization (CTSO) in Your Classroom

CTSOs are a great resource to put classroom learning into real-life experiences for your students through classroom, regional, state, and national competitions, and leadership opportunities. Below are CTSO connections for this course, note this is not an exhaustive list.

- Participate in CTSO Fall Leadership Conference to engage with peers by demonstrating logical thought processes and developing industry specific skills that involve teamwork and project management.
- Participate in CTSO events that align with this course including Agriscience Fair, Agricultural Issues, Employment Skills, and Horse Evaluation.

For more ideas and information, visit <https://tnffa.org/>.

### Using a Work-based Learning (WBL) in Your Classroom

Sustained and coordinated activities that relate to the course content are the key to successful work-based learning. Possible activities for this course include the following. This is not an exhaustive list.

- **Standards 1.1-2.3** | Panel of guest speakers from the equine industry to discuss career options, training, credentials, education requirement, etc. with students.
- **Standards 3.1-9.2** | Integrated project with multiple interactions with equine industry professionals that focus on breed selection, anatomy, nutrition, genetics, and reproduction.
- **Standards 10.1-12.1** | Virtual exchanges with an industry professional to discuss equine ethics, animal rights & welfare, equine competitions, and give feedback on students' work.

## Course Description

*Equine Science* is designed to introduce students to the history and domestication, scientific principles of breeding and husbandry of horses, including the production, care, and management of horses. Upon completion of this course, proficient students will be equipped with the technical knowledge and skills needed to prepare for further education and careers in the equine industry.

## Course Standards

### 1. Domestication and Equine Organizations

- 1.1 History of Equine Domestication: Research the **history of equine evolution** leading including the domestication and historic value of equine. Identify the **important trends in Equus evolution** and explain **their significance**.
- 1.2 SAE Opportunities: Identify and describe **Supervised Agricultural Experience (SAE) opportunities** in the field of equine science. Evaluate, identify, and develop an SAE into one of the immersion SAE programs.

### 2. Economic and Occupational Implications

- 2.1 Economic Impact of the Equine Industry: Determine the **economic impact of the equine industry** by investigating, **implications** for racing, rodeo, equestrian therapy, law enforcement, and recreation industries.
- 2.2 Career and Entrepreneurship Opportunities: Explore and compare **local and regional career opportunities** in the equine industry including entrepreneurship opportunities and evaluate labor data to **predict the employment outlook**. Describe the **knowledge, skills, and abilities necessary for a diverse range of careers** citing specific textual evidence from local job postings and Tennessee labor data.
- 2.3 Business and SAE Financial Recordkeeping: Accurately maintain an active **recordkeeping system** and apply **proper accounting and financial records** as they relate to an equine supervised agricultural experience (SAE) program or enterprise. Demonstrate the ability to summarize business records such as individual enterprise budgets, profit and loss statements, inventory management, transportation cost, and other specific reports by completing SAE and related financial applications.

### 3. Behavior

- 3.1 Behavior: Describe the **relationship between the different equine behavioral categories** and how behavior can influence training. Explain the **importance of reading the emotions of a horse** as it relates to safe handling, working, and riding the horse. Identify **common body positioning for the horse** in terms of their senses, as well as how their herd tendencies determine much about their behavior.

#### 4. Personal and Occupational Health and Safety

- 4.1 Health Requirements and Regulations: Correctly identify and summarize **laws and regulations** that pertain to equine health and safety from state and national legislation. Describe **health requirements** and necessary **documentation for equine transportation and change of ownership**.
- 4.2 Safety and Operational Procedures: Review common **laboratory safety procedures for operating tools and equipment** in equine laboratories or facilities, including but not limited to accident prevention and control procedures. Demonstrate the ability to follow safety and operational procedures in a lab setting and complete a safety test with 100 percent accuracy.
- 4.3 Personal and Animal Safety: Demonstrate the ability to follow **procedures** precisely, attending to **special cases or exceptions** noted in appropriate materials, and apply them to:
- Various types of behavior
  - Animal restraint and handling
  - Techniques for transportation
  - Appropriate use of chemicals (such as pesticide, fungicide, disinfectants)
  - Differentiate between effective restraint methods for handling equine and methods proven to be less effective.

#### 5. Anatomy and Physiology

- 5.1 Functional Anatomy: Summarize **the functional anatomy of the horse** as it relates to growth, aging, movement, selection, nutrition, health, breeding, and behavior. Identify the **function and the components of the skeletal, muscular, digestive, urinary, respiratory, circulatory, nervous, reproductive, and endocrine systems**.
- 5.2 Confirmation: Research the **importance of confirmation** when selecting an animal. Distinguish the characteristics that make the different equine breeds desirable for their specific uses. Discuss the following as it pertains to ideal confirmation:
- Breed type
  - Balance
  - Structure correctness
  - Muscling
  - Movement
  - Quality
  - Sex character, and
  - Size
- 5.3 Soundness and Unsoundness: Classify common structural problems of a horse including the **problems caused by unsoundness**. Determine how to methodically examine the soundness of a horse. Describe **solutions for soundness problems** that should be **treated by a veterinarian** and explain solutions for these problems.

## 6. Health and Basic Management

- 6.1 Overall Health: Describe the relationship between **the horse's look and physical condition** and its **overall health**. Compare and contrast **equine diseases** to develop a prevention/vaccination program.
- 6.2 Facilities: Research **appropriate equine facilities** based on housing, space, safety, feeding, breeding, and general care requirements. Compare the **proper procedures for building a horse fence**.
- 6.3 Hoof Care: Summarize the **importance of healthy feet** as it relates to the overall health of the horse. Distinguish the **function of the hoof's various parts**. Outline a **hoof care inspection process**, including tools and equipment to prevent or treat common hoof problems.

## 7. Nutrition and Digestive Systems

- 7.1 Digestive Systems: Explain the **relationships of digestive system types to the ability of equine to digest and absorb different classes of feed**. Differentiate between ruminant, non-ruminant, and cecum digestive systems, comparing and contrasting their anatomical and physiological differences.
- 7.2 Nutritional Requirements: Research **nutrient requirements of the diets of horses** and organize these into various nutrient groups. Differentiate between **roughages and concentrates** and their nutritional values.
- 7.3 Feed Rations: Interpret **feed labeling** and evaluate factors such as **life stage** and **activity level** to determine the **nutritional needs of equine**. Recommend a **balanced ration feeding program**.
- 7.4 Managing Health through Nutrition: Classify the **symptoms of diseases** that can be **managed with nutrition**, and recommend the appropriate control procedures.

## 8. Breeds and Genetics

- 8.1 Breed Identification: Explain the **development of different breeds, types, and classes of equine**, including unique **characteristics of each breed**. Analyzing the **historical role** of each in the development of various societies.
- 8.2 Principles of Genetics: Explain how the **roles of heritability, selection intensity, generation interval, and other advanced principles of genetics** (such as DNA testing for disorders) apply to predict gene and trait transfer in equine. Principles include but are not limited to:
- Economically important traits

b. Interpretation and utilization of animal performance records

8.3 Color and Markings: Identify the **common coat colors, face and leg markings, and coat color patterns**. Determine genetic pairings that make up different equine color patterns.

## 9. Reproduction

9.1 Reproductive Systems: Research and illustrate the major components of **equine male and female reproductive systems**. Distinguish the **function of reproductive organs, endocrine glands, and hormones**. Compare and contrast the **physiological changes** that occur during reproductive phases, including the estrous cycle, fertilization, gestation, parturition, and lactation.

9.2 Reproductive Methods: Discuss **methods of equine reproduction**, including semen handling, artificial insemination, embryo transfer, cloning, and neonatal care.

## 10. Animal Ethics

10.1 Fundamental of Animal Rights and Welfare: Identify the **fundamental philosophies related to animal rights and animal welfare**. Compare the **impact** of specific persons, organizations, and legislation related to animal rights and welfare, specific **to equine issues**.

- Abuse and/or neglect
- Environmental implications
- Exhibiting and showing
- Global equine ethic issues and their relation to local problems

## 11. Equine Organizations

11.1 Professional Organizations: Explain the **significance of professional organizations** to the equine industry. Identify **industry-related professional organizations** and describe their benefits.

## 12. Equitation

12.1 Equitation: Compare and contrast the two common **styles of riding horses**, English and Western. Identify the proper **tack and equipment** for the different styles of riding, discuss the **history of the different styles** and their **competitions**, and discuss the **similar practices** amongst the different styles to display quality horsemanship.

## Standards Alignment Notes

\*References to other standards include:

- SAE: [Supervised Agricultural Experience](#): All Agriculture students are encouraged to participate in a Supervised Agricultural Experience program to practice and demonstrate the knowledge and skills learned in their agriculture courses.
- AFNR: [National Agriculture, Food, & Natural Resources \(AFNR\) Career Cluster Content Standards](#): Students engaged in activities outlined above should be able to demonstrate fluency in Standards AS and CS at the conclusion of the course.
- P21: Partnership for 21st Century Skills [Framework for 21st Century Learning](#)
  - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.