# Equine Science

## Grades 11-12

### Unit #1

<table>
<thead>
<tr>
<th>Course/Subject:</th>
<th>Grade:</th>
<th>History of Equine</th>
<th>Suggested Timeline:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equine Science/ Agriculture</td>
<td>11-12</td>
<td></td>
<td>2 weeks</td>
</tr>
</tbody>
</table>

## Grade Level Summary

In this course, students will study the functional anatomy and physiology, evaluation, management, care, and training of horses. Through class lectures, guest speakers, hands-on lab exercises, and field experiences, students will gain an understanding of the science and business behind the equine industry. This will lead to career and college readiness for those equestrians interested in further equine studies, equine careers, and/or lifelong horsemanship. All students are FFA members through this course.

## Grade Level Units

<table>
<thead>
<tr>
<th>Unit 1: History of Equine</th>
</tr>
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<tbody>
<tr>
<td>Unit 2: Identification and Breeds</td>
</tr>
<tr>
<td>Unit 3: A Healthy Horse</td>
</tr>
<tr>
<td>Unit 4: Equine Behavior</td>
</tr>
<tr>
<td>Unit 5: Management</td>
</tr>
<tr>
<td>Unit 6: Nutrition</td>
</tr>
<tr>
<td>Unit 7: Reproduction</td>
</tr>
</tbody>
</table>

## Unit Title

History of Equine

## Unit Summary

Students will learn about the history and evolution of equine species. Students will gain knowledge in how equines were domesticated and used by the human race. The unit will bring the students to modern day equine industry in Pennsylvania and the United States.

## Unit Essential Questions:

1. How did animals evolve into the horse as we know it today?
2. How did the use of the horse influence history?
3. What are the dynamics of current day equine industry?

## Key Understandings:

1. Evolution of the horse
2. Domestication of horses
3. Horse Use
4. Modern Equine Industry

## Focus Standards Addressed in the Unit:

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.01.01.</td>
<td>Evaluate the development and implications of animal origin, domestication and distribution on production practices and the environment.</td>
</tr>
<tr>
<td>AS.01.02.</td>
<td>Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.</td>
</tr>
<tr>
<td>AS.01.03.</td>
<td>Analyze and apply laws and sustainable practices to animal agriculture from a global perspective.</td>
</tr>
</tbody>
</table>
## Important Standards Addressed in the Unit:

<table>
<thead>
<tr>
<th>Misconceptions</th>
<th>Proper Conceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge &amp; Concepts</th>
<th>Skills &amp; Competencies</th>
<th>Dispositions &amp; Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Careers in the horse industry</td>
<td>Compare and contrast cultural and societal uses and contributions of horses locally and globally.</td>
<td>Curiosity</td>
</tr>
<tr>
<td>How horses were domesticated</td>
<td>Identify products and uses of horses in Pennsylvania.</td>
<td></td>
</tr>
<tr>
<td>Important roles of horses throughout history</td>
<td>Describe the role horses plays in local, state, national, and global economies</td>
<td></td>
</tr>
</tbody>
</table>

## Academic Vocabulary:

- Equus caballus
- Equus asinus
- Equus burchelli
- Equus grevyi
- Equus zebra
- Equus hemionus
- Equus przewalski
- Eohippus
- Mesohippus
- Merychippus
- Pliohippus
- Draft
- Ox
- Ass
- Snaffle bit
- Curb Bit
- Chariotry
- Mule

## Assessments:

- Quizzes
- Test
- Projects
- Class participation and practices

## Differentiation:

- Book work
- Lecture
- Demonstrations
- Video clips
- Hands on learning
- IEP accommodations
Interdisciplinary Connections:
- History

Additional Resources:
- Power Points

Created By:
Meagan Smyers
In this course, students will study the functional anatomy and physiology, evaluation, management, care, and training of horses. Through class lectures, guest speakers, hands-on lab exercises, and field experiences, students will gain an understanding of the science and business behind the equine industry. This will lead to career and college readiness for those equestrians interested in further equine studies, equine careers, and/or lifelong horsemanship. All students are FFA members through this course.

Focus Standards Addressed in the Unit:

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.06.</td>
<td>Classify, evaluate and select animals based on anatomical and physiological characteristics.</td>
</tr>
</tbody>
</table>

Important Standards Addressed in the Unit:
### Misconceptions:

<table>
<thead>
<tr>
<th>Misconception</th>
<th>Proper Conception</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. There are three colors of horses; brown, black, and white.</td>
<td>1. There are numerous ways to identify horses based on different colors, patterns, and markings.</td>
</tr>
</tbody>
</table>

### Knowledge & Concepts
- Students will know the use of different horse breeds.

### Skills & Competencies
- Students will be able to identify horse breeds after seeing photographs.
- Students will be able to distinguish color pattern from photographs.
- Students will be able to identify color markings by name from photographs.

### Dispositions & Practices
- Curiosity

### Academic Vocabulary:

<table>
<thead>
<tr>
<th>Bay</th>
<th>Red Roan</th>
<th>Grullo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorrel</td>
<td>Perlino</td>
<td>Chestnut</td>
</tr>
<tr>
<td>Dun</td>
<td>Rabicano</td>
<td>Blanket</td>
</tr>
<tr>
<td>Red Dun</td>
<td>Tobiano</td>
<td>Leopard</td>
</tr>
<tr>
<td>Palomino</td>
<td>Overo</td>
<td>Star</td>
</tr>
<tr>
<td>Buckskin</td>
<td>Tobero</td>
<td>Stripe</td>
</tr>
<tr>
<td>Cremello</td>
<td>Coronet</td>
<td>Snip</td>
</tr>
<tr>
<td>Half Stocking</td>
<td>Half pastern</td>
<td>Blaze</td>
</tr>
<tr>
<td>Full Stocking</td>
<td>Outside heel</td>
<td>Bald</td>
</tr>
<tr>
<td>Inside heel</td>
<td>Hinny</td>
<td>Jack</td>
</tr>
<tr>
<td>Mule</td>
<td>Medium Weight</td>
<td>Jenny</td>
</tr>
<tr>
<td>Molly</td>
<td>Heavy weight</td>
<td>Zedonds</td>
</tr>
<tr>
<td>Light Weight</td>
<td></td>
<td>Zorse</td>
</tr>
</tbody>
</table>

### Assessments:
- Quizzes
- Test
- Projects
- Class participation and practices

### Differentiation:
- Book work
- Lecture
- Demonstrations
- Video clips
- Hands on learning
- IEP accommodations
Interdisciplinary Connections:
● Science

Additional Resources:
● *Modern Livestock and Poultry 6th Edition*
● Power Points

Created By:
Meagan Smyers
Equine Science
Grades 11-12
Unit #3

<table>
<thead>
<tr>
<th>Course/Subject:</th>
<th>Grade:</th>
<th>A Healthy Horse</th>
<th>Suggested Timeline:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equine Science/ Agriculture</td>
<td>11-12</td>
<td></td>
<td>5 weeks</td>
</tr>
</tbody>
</table>

**Grade Level Summary**

In this course, students will study the functional anatomy and physiology, evaluation, management, care, and training of horses. Through class lectures, guest speakers, hands-on lab exercises, and field experiences, students will gain an understanding of the science and business behind the equine industry. This will lead to career and college readiness for those equestrians interested in further equine studies, equine careers, and/or lifelong horsemanship. All students are FFA members through this course.

**Grade Level Units**

| Unit 1: History of Equine
| Unit 2: Identification and Breeds
| Unit 3: A Healthy Horse
| Unit 4: Equine Behavior
| Unit 5: Management
| Unit 6: Nutrition
| Unit 7: Reproduction |

**Unit Title**

A Healthy Horse

**Unit Summary**

During this unit, students will learn how to select a healthy horse. Students will gain an understanding of disease and parasites that affect the equine species. Students will learn how to evaluate different horses and distinguish between horses that are of poor quality and those that are at exceptional quality and health.

**Unit Essential Questions:**

1. How do you prevent disease in a horse herd?
2. What characteristics should you evaluate when selecting a horse?

**Key Understandings:**

1. Equine Diseases
2. Selection, Evaluation, and Judging
3. Equine Health

**Focus Standards Addressed in the Unit:**

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.07.</td>
<td>Apply principles of effective animal health care.</td>
</tr>
<tr>
<td>AS.08.</td>
<td>Analyze environmental factors associated with animal production.</td>
</tr>
<tr>
<td>AS.05.</td>
<td>Evaluate environmental factors affecting animal performance and implement procedures for enhancing performance and animal health.</td>
</tr>
</tbody>
</table>
**Important Standards Addressed in the Unit:**

<table>
<thead>
<tr>
<th>Misconceptions:</th>
<th>Proper Conceptions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Horses grow new teeth (baby vs. adult teeth)</td>
<td>1. Horses are born with all the teeth they will ever have and they wear them down over time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge &amp; Concepts</th>
<th>Skills &amp; Competencies</th>
<th>Dispositions &amp; Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Knowledge of common disease</td>
<td>● Identify the basic anatomy of horses.</td>
<td>● Resilience</td>
</tr>
<tr>
<td>● Knowledge of common parasites</td>
<td>● Describe the functions of the horse body systems and system components.</td>
<td></td>
</tr>
<tr>
<td>● Normal vital signs of a horse</td>
<td>● Describe preventative horse health and treatment techniques.</td>
<td></td>
</tr>
<tr>
<td>● Body condition scores</td>
<td>● Investigate environmental, food, medicinal, public safety, and biosecurity issues related to horse health.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Examine the impact of pests and diseases as variables in horse production.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Judging conformation of a horse</td>
<td></td>
</tr>
</tbody>
</table>

**Academic Vocabulary:**

- Respiration Rate
- Capillary Refill
- Mucous Membranes
- Skin Pliability
- Feces
- Body Condition Score
- Hand
- Wolf Teeth
- Conformation
- Structural Correctness
- Pigeon Toe
- Splay Foot
- Ascarids
- Strongles
- Stomach Bots

**Assessments:**

- Quizzes
- Test
- Projects
- Class participation and practices

**Differentiation:**

- Book work
• Lecture
• Demonstrations
• Video clips
• Hands on learning
• IEP accommodations

**Interdisciplinary Connections:**
• Science

**Additional Resources:**
• *Modern Livestock and Poultry 6th Edition*
• Power Points

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In this course, students will study the functional anatomy and physiology, evaluation, management, care, and training of horses. Through class lectures, guest speakers, hands-on lab exercises, and field experiences, students will gain an understanding of the science and business behind the equine industry. This will lead to career and college readiness for those equestrians interested in further equine studies, equine careers, and/or lifelong horsemanship. All students are FFA members through this course.

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- Unit 1: History of Equine
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- Unit 5: Management
- Unit 6: Nutrition
- Unit 7: Reproduction

**Unit Title**

Equine Behavior

**Unit Summary**

During this unit students will gain knowledge on how horses use their senses. After gaining an understanding on how horses use their vision, hearing, touch, and memory students will be able to interpret normal and abnormal equine behavior. Understanding equine behavior allows for a better training experience for both the horse and trainer.

**Unit Essential Questions:**

1. How do horses use their physical parameters?
2. How can you be a good horseman?

**Key Understandings:**

1. Vision
2. Touch
3. Memory
4. Hearing
5. Equine Behavior

**Focus Standards Addressed in the Unit:**

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.02.</td>
<td>Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.</td>
</tr>
<tr>
<td>AS.06.03.</td>
<td>Select and train animals for specific purposes and maximum performance based on anatomy and physiology.</td>
</tr>
</tbody>
</table>
Important Standards Addressed in the Unit:

Misconceptions: | Proper Conceptions:
--- | ---
1. Horses are color blind. | 1. Horses can see different colors but not same as humans. Horses can see blues and greens better than reds and yellows.

<table>
<thead>
<tr>
<th>Knowledge &amp; Concepts</th>
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</tr>
</thead>
</table>
| ● Physical Parameters of a horse  
● Behavior Types  
● Training methods | ● Describe normal horse behavior along with causes and potential results of abnormal behavior (social, sexual, reproductive, and ingestive).  
● Investigate emerging technologies within practical applications of equine science.  
● Explore ethical, legal, and social biotechnology issues. | ● Responsibility |

Academic Vocabulary:

| Binocular vision  
| Fight or Flight  
| Monocular Vision  
| Gregarious Nature | Horsemanship  
| Agonistic Behavior  
| Epimeletic Behavior  
| Et-Epimeletic Behavior | Ingestive Behavior  
| Eliminative Behavior  
| Cribbing  
| Weaving |

Assessments:

| Quizzes  
| Test  
| Projects  
| Class participation and practices |

Differentiation:

| Book work  
| Lecture  
| Demonstrations  
| Video clips  
| Hands on learning  
| IEP accommodations |
Interdisciplinary Connections:
● Science

Additional Resources:
● *Modern Livestock and Poultry 6th Edition*
● Power Points

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Managing the facilities for equine industry brings a lot of factors into the role of a manager. Human interactions, environmental elements, and equine behavior all must be considered. Students will gain knowledge of housing, feeding, and caring for equines by putting the horses’ welfare at a priority.

**Unit Essential Questions:**
1. What elements are encompassed when providing for the welfare of horses?

**Key Understandings:**
1. Housing
2. Ventilations
3. Fencing
4. Pastures
5. Manure

**Focus Standards Addressed in the Unit:**

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.08.02.</td>
<td>Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.</td>
</tr>
<tr>
<td>AS.08.01.</td>
<td>Design and implement methods to reduce the effects of animal production on the environment.</td>
</tr>
</tbody>
</table>
**AS.07.** Apply principles of effective animal health care.

**AS.02.** Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.

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**Important Standards Addressed in the Unit:**

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**Misconceptions:**

<table>
<thead>
<tr>
<th>Misconceptions</th>
<th>Proper Conceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. You do not need a manure management plan if you only have one or two horses.</td>
<td>1. There needs to be a manure management plan on hand even if you only own one horse.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Knowledge &amp; Concepts</th>
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<th>Dispositions &amp; Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Manure management plans for equine facilities</td>
<td>● Demonstrate safe equine handling techniques for production, and/or recreation.</td>
<td>● Responsibility</td>
</tr>
<tr>
<td></td>
<td>● Evaluate the equipment and facilities used in modern equine production.</td>
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</tr>
<tr>
<td></td>
<td>● Investigate emerging technologies within practical applications of equine science.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Identify functions, role and purpose of management in a business.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Recognize the importance of water quality, air quality, and waste management within horse farm.</td>
<td></td>
</tr>
</tbody>
</table>

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**Academic Vocabulary:**

- Social Environment
- Chemical Environment
- Biological Environment
- High Tensile Wire
- PVC
- Metal Frame
- Pole
- Conventional
- Pipe Fence
- Cable
- Round Pen
- Arena
- Post and Board
- Woven Wire
- Electric
- Barbed Wire

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**Assessments:**

- Quizzes
- Test
● Projects
● Class participation and practices

**Differentiation:**

- Book work
- Lecture
- Demonstrations
- Video clips
- Hands on learning
- IEP accommodations

**Interdisciplinary Connections:**

- Science

**Additional Resources:**

- Power Points

**Created By:**
Meagan Smyers
### Grade Level Summary

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### Grade Level Units

- Unit 1: History of Equine
- Unit 2: Identification and Breeds
- Unit 3: A Healthy Horse
- Unit 4: Equine Behavior
- Unit 5: Management
- Unit 6: Nutrition
- Unit 7: Reproduction

### Unit Title

Nutrition

### Unit Summary

Students will learn the different types of feed stuff suitable for an equine diet. Students will gain knowledge of nutritional requirements for horses based on the horse's lifestyle and level of activity. Students will formulate feed rations and learn about common dietary concerns in the equine species.

### Unit Essential Questions:

1. What is horse feed?
2. What are the nutritional requirements of a horse?

### Key Understandings:

1. Equine Nutrition
2. Water Requirements
3. Forage Feeding
4. Grain Feeding
5. Digestive Concerns

### Focus Standards Addressed in the Unit:

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.03.01</td>
<td>Analyze the nutritional needs of animals.</td>
</tr>
<tr>
<td>AS.03.02</td>
<td>Analyze feed rations and assess if they meet the nutritional needs of animals.</td>
</tr>
</tbody>
</table>
AS.03.03 Utilize industry tools to make animal nutrition decisions.

### Important Standards Addressed in the Unit:

<table>
<thead>
<tr>
<th>Misconceptions:</th>
<th>Proper Conceptions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Horses need to be fed grain.</td>
<td>1. Forage, pasture and hay is the basis of a horse’s nutritional and dietary requirements.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge &amp; Concepts</th>
<th>Skills &amp; Competencies</th>
<th>Dispositions &amp; Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Forages, Roughages, and Grains</td>
<td>● Identify the basic anatomy of horses.</td>
<td>● Ethical Judgment</td>
</tr>
<tr>
<td>● Water requirements</td>
<td>● Describe the functions of the equine digestive system and system components.</td>
<td>● Responsibility</td>
</tr>
<tr>
<td>● Dietary concerns in Equines</td>
<td>● Explain the significance of the 6 classes of nutrients for equine growth, performance, maintenance and reproduction.</td>
<td></td>
</tr>
</tbody>
</table>

### Academic Vocabulary:

| ● Forage | ● Colic | ● Guaranteed Analysis |
| ● Roughage | ● Dehydration | ● Feedstuffs |
| ● Ad-libitum | ● AFCO | ● Complete Feeds |
| ● Motility | ● AFIA | ● Processed Concentrates |

### Assessments:

| ● Quizzes | ● Guadanteed Analysis |
| ● Test | |
| ● Projects | |
| ● Class participation and practices | |

### Differentiation:

| ● Book work | |
| ● Lecture | |
| ● Demonstrations | |
| ● Video clips | |
| ● Hands on learning | |
| ● IEP accommodations | |
Interdisciplinary Connections:
- Science
- Math

Additional Resources:
- Power Points

Created By:
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Grade Level Summary

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Grade Level Units

1. History of Equine
2. Identification and Breeds
3. A Healthy Horse
4. Equine Behavior
5. Management
6. Nutrition
7. Reproduction

Unit Title

Reproduction

Unit Summary

During this unit, students will learn about the male and female reproductive anatomy. Students will learn about reproductive behavior and how to care for a foal through gestation and its first weeks of life.

Unit Essential Questions:

1. What causes poor reproductive efficiency?

Key Understandings:

1. Female Reproductive Anatomy
2. Male Reproductive Anatomy
3. Reproductive Behavior
4. Foaling

Focus Standards Addressed in the Unit:

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.02.</td>
<td>Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.</td>
</tr>
<tr>
<td>AS.03.</td>
<td>Design and provide proper animal nutrition to achieve desired outcomes for performance, development, reproduction and/or economic production.</td>
</tr>
</tbody>
</table>
### Important Standards Addressed in the Unit:

- Misconceptions:
  1. Horses can be bred at any time of the year.

- Proper Conceptions:
  1. Horses are naturally seasonal breeders and this misconception has caused fertility problems.

### Knowledge & Concepts

<table>
<thead>
<tr>
<th>Reproductive Problems in equines</th>
</tr>
</thead>
</table>

### Skills & Competencies

- Identify the basic reproductive anatomy of horses.
- Describe the functions of the horse reproductive systems and system components.
- Describe normal equine behavior by breed, along with causes and potential results of abnormal sexual and reproductive behavior.
- Predict genetic types using the Punnet square method.
- Evaluate the equipment and facilities used in modern equine production.
- Investigate emerging technologies within practical applications of equine science.

### Dispositions & Practices

- Responsibility

### Academic Vocabulary:

- Vulva
- Cervix
- Uterus
- Oviducts
- Ovaries
- Labia
- Vestible
- Winking
- Testes
- Spermatic cord
- Ejaculate
- Epididymal
- Cryptochidism
- Spermatogenesis

### Assessments:

- Quizzes
- Test
- Projects
- Class participation and practices

### Differentiation:

8/9/17 – Page 20
- Book work
- Lecture
- Demonstrations
- Video clips
- Hands on learning
- IEP accommodations

**Interdisciplinary Connections:**
- Science
- Math

**Additional Resources:**
- Power Points

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Meagan Smyers