

TRUMBULL PUBLIC SCHOOLS
Trumbull, Connecticut

ECE Large Animal Science
Grades 11-12
Agriscience Department
Trumbull High School

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Curriculum Writing Team

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The Trumbull Board of Education will continue to take Affirmative Action to ensure that no persons are discriminated against in its employment.

CORE VALUES AND BELIEFS

The Trumbull School Community engages in an environment conducive to learning which believes that all students will **read and write effectively**, therefore communicating in an articulate and coherent manner. All students will participate in activities **that present problem-solving through critical thinking**. Students will use technology as a tool applying it to decision making. We believe that by fostering self-confidence, self-directed and student-centered activities, we will promote **independent thinkers and learners**. We believe **ethical conduct** to be paramount in sustaining the welcoming school climate that we presently enjoy.

Approved 8/26/2011

INTRODUCTION

ECE Large Animal Science is designed for the student who has successfully completed Agriscience 9 and Agriscience 10 coursework in introductory animal science.

The ECE Large Animal Science course examines the impact of livestock animals at the local, national, and international level. Students get a hands-on learning experience with the Agriscience Center's demonstration farm, which is entirely student-run and operated. Various topics concerning animal welfare and production are examined, and students use both classic and emerging technologies to care for animals. Students are responsible for taking what they learn in the classroom and applying it to the animals in their care, practicing veterinary, record-keeping, handling, and technical skills all the while.

Students also complete "supervised agricultural experience" (SAE) projects, which help to reinforce career options and skills introduced in the classroom. Involvement in the chapter's FFA activities reinforces personal growth, premier leadership, and career success while being involved in the local community.

PHILOSOPHY

Success in Agriscience depends upon active involvement in the Three Circle Model of Agricultural Education, including classroom learning experiences, participation in the student organization FFA, and student Supervised Agricultural Experience projects. All areas aim to improve leadership, technical knowledge and skills hands-on, responsibility and accountability, and career readiness for the ever-changing future.

COURSE GOALS

Information, Media And Technology Skills

- Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.

Learning and Innovation Skills

- Work independently and collaboratively to solve problems and accomplish goals
- Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.

Life and Career Skills

- Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.
- Develop appreciation for and relationships with the animals in our care.
- Develop responsible management, leadership, and record keeping skills that improve the welfare of our animals.

- Develop and maintain interpersonal relationships through leadership and cooperative activities.

COURSE ENDURING UNDERSTANDINGS

Students will understand and appreciate how agriculture, food, fiber, and natural resources impact their daily lives, and develop an awareness of our food and clothing systems, and what role animals play in them. Students will develop and implement care plans for production and/or companion animals with respect to human and animal welfare, while using a balance of modern and classic technologies and resources.

COURSE ESSENTIAL QUESTIONS

- How does animal agriculture impact me and my community?
- What types of livestock animals are raised in the United States, for what reasons?
- How can we provide the best care for livestock animals, using today's technology?
- What career options exist in the field of animal care and livestock production?

COURSE KNOWLEDGE & SKILLS

Students will understand . . .

- the basic principles of animal welfare
- the history, domestication, and development of the horse over time
- how the anatomy and physiology of livestock animals relates to how to properly feed, breed, handle, house, train, and otherwise care for each species
- how major diseases are transmitted, diagnosed, and treated in the animal industry
- breeding goals and systems, novel technologies and genetics for all livestock species
- normal and abnormal animal behavior
- career opportunities in related and relevant fields

Students will be able to . . .

- practice safe handling and daily care of animals
- describe the current state of the horse and livestock industries
- describe the form and function of a variety of major breeds of horse, cattle, and sheep
- evaluate and develop a feed plan for horses, cattle, and sheep
- evaluate the physical body structure and functionality of horses, cattle, and sheep
- apply principles of animal psychology to safely manage livestock and train behaviors
- describe and design best management practices for livestock facilities and the proper housing of livestock
- manage a breeding and subsequent lambing season, providing care for ewes and lambs
- Describe a variety of animal products and byproducts
- Process sheep and/or alpaca fleece by hand

COURSE SYLLABUS

Unit 1: Introduction to Large Animal Science

Unit 2: Equine Evolution & Use

Unit 3: Equine & Livestock Breed Identification

Unit 4: Applied Genetics

Unit 5: Reproductive Systems & Management

Unit 6: Skeletal System

Unit 7: Equine & Livestock Health Management

Unit 8: Wool Science & Fiber Processing

Unit 9: The Current U.S. Equine & Livestock Industry

Unit 10: Anatomy & Selection of Horses & Livestock

Unit 11: Digestion & Nutrition of Livestock

Unit 12: Equine & Livestock Facilities Design

Unit 13: Behavior and Training of Domestic Animals (ECE)

Unit 1: Introduction to Large Animal Science

Performance Standards

- The student will demonstrate competence in the application of scientific principles and practices to the production and management of animals
- AS.02.01. Performance Indicator: Classify animals according to hierarchical taxonomy and agricultural use
- CS.01.01.01.b. Demonstrate the ability to complete a task without assistance
- **CS.01.01.01.c. Work independently and in group settings to accomplish a task**
- **AS.04. Performance Element: Apply principles of animal nutrition to ensure the proper growth, development, reproduction and economic production of animals**
- AS.05.02. Performance Indicator: Evaluate animals for breeding readiness and soundness
- AS.05.03.05.a. Discuss the uses and advantages and disadvantages of natural breeding and artificial insemination
- **AS.06.01. Performance Indicator: Demonstrate safe animal handling and management techniques**

Essential Questions

- How can we provide the best care for the animals on our school farm?
- How can we best utilize record-keeping skills to benefit our animals and our program?
- How can we implement safe handling and management practices on our farm?

Content (Scope and Sequence)

- Course and farm expectations (syllabus, working papers)
- Establish cooperative farm teams and routines (barn managers, farm teams, scheduling)
- Farm Tour: animal inventory, daily chores (feeding, grooming, & cleaning schedules)
- Safe handling, movement, and restraint of animals (tack, tying, flight zones & herding practices, working with male animals)
- Ethical Treatment: animal welfare, safe handling, proper feed/watering/cleaning schedules, reading animal behavior & body language
- Maintenance of farm spaces, structures, feeds, and tools
- Development and maintenance of shared online “Flock Book,” containing farm goals, breeding & individual animal data, financial records, health records
- Begin decision-making for sheep breeding season
- Grooming & show preparations (washing, slick-shearing, fitting, halter-breaking, showmanship)
- Manage student Supervised Agricultural Experience projects

Assured Experiences

- Farm Inventory Quiz
- Flock Book
- Knot-tying, haltering, hoof care skills testing
- Showmanship practice

Time Allocation

Approximately 3 weeks

Unit 2: Equine Evolution & Use

Performance Standards

- AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution
- **AS.01.01.01.a. Identify the origin, significance, distribution and domestication of animal species**
- AS.02.01.01.c. Classify animals according to the taxonomic classification system

Essential Questions

- How did the horse develop over time, and how is it different today from long ago?
- How are horses utilized in today’s modern society versus when first domesticated?

Content (Scope and Sequence)

- Classification of equines (*Equus caballus*)
- Definition of concepts: evolution, genetic drift, mutation, natural selection
- Evolution and adaptations of the horse from *Eohippus* to *Equus caballus*
- Origin, domestication, and world travels of the horse over time
- Other equine species and world distribution
- Historical uses of the horse over time

- Today's equine sports: Polo, Eventing, Rodeo, Driving, Racing, Vaulting, English & Western riding

Assured Experiences (Projects)

- Equine sports presentation
- Other equines study

Time Allocation

Approximately 2 weeks

Unit 3: Equine & Livestock Breed Identification

Performance Standards

- **AS.02.01.02.c. Appraise and evaluate the economic value of animals for various applications in the agriculture industry.**
- AS.02.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.
- AS.02.03.01.b. Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.

Essential Questions

- Why and how did different breeds of horse/sheep/cattle develop?
- Which breeds excel at meat, wool, & dairy production?
- Which breeds have specific characteristics that need to be attended to by owners?
- How well do our school animals compare to breed standards?

Content (Scope and Sequence)

- Classification of equine breeds: draft, light, pony, miniature, and hot/cold/warmbloods
 - Breed identification (approximately 25 breeds), abilities and uses
 - Breed-specific genetic & cultural concerns (Tennessee Walker, Appaloosa, Paint)
 - Crossbreeding horses - why and how?
- Classification of cattle breeds: dairy and beef
 - Breed identification (approximately 10), abilities and uses
 - Crossbreeding cattle - why and how?
- Classification of sheep breeds: wool, meat, and dairy
 - Breed identification (approximately 15), abilities and uses
 - Evaluation of our flock according to breed standards

Assured Experiences (Projects)

- Evaluation of animal according to breed standard
- Comparison of purebred and crossbred animals
- Breed profile presentation

Time Allocation

Approximately 4 weeks

Unit 4: Applied Genetics

Performance Standards

- AS.03.01.01.a. Explain methods of determining animal health and disorders.
- **AS.05.02.02.a. Discuss the importance of efficient and economic reproduction in animals.**
- AS.05.02.02.b. Evaluate reproductive problems that occur in animals.
- **AS.05.03.01.a. Explain genetic inheritance in agricultural animals**
- **AS.04.02.02.b. Demonstrate how to determine probability trait inheritance in animals.**
- AS.04.02.02.c. Select and evaluate breeding animals and determine the probability of a given trait in their offspring.
- AS.04.02.03.b. Analyze how DNA analysis can detect genetic defects in breeding stock

Essential Questions

- How is genetic material passed from generation to generation?
- What traits are biologically and economically important?
- How has selective breeding influenced the genetic pools available in livestock today?

Content (Scope and Sequence)

- Review of terminology: Trait, gene, allele, genome, chromosome, genotype vs. phenotype, dominant and recessive, homozygous and heterozygous, using animal examples
- Qualitative and quantitative traits in livestock
 - Economically important traits in livestock animals
 - Inheritance and analysis qualitative of quantitative traits
- Punnett square application (monohybrid cross, dihybrid cross, trihybrid cross)
 - Setup and functionality, percentage calculation of genotypes and phenotypes, backwards analysis of parentage
- Types of inheritance: simple dominance, incomplete dominance, codominance, sex-linked
- Genetic testing in animals, genomics
- Polygenics and heritability factors in livestock
- Animal pedigrees (analysis and construction)

Assured Experiences (Projects)

- Punnett square calculations
- Trait heritability analysis
- Pedigree construction and evaluation

Time Allocation

Approximately 2 weeks

Unit 5: Reproductive Systems & Management

Performance Standards

- AS.04.01. Evaluate animals for breeding readiness and soundness.
- **AS.04.01.01.b. Analyze the functions of major organs in the male and female reproductive systems.**
- AS.04.01.01.c. Select breeding animals based on characteristics of the reproductive organs.
- AS.04.01.02.b. Assess and describe factors that lead to reproductive maturity.
- AS.04.02.03.b. Evaluate reproductive problems that occur in animals.
- AS.04.02.03.c. Treat or cull animals with reproductive problems.
- AS.04.02. Apply scientific principles to select and care for breeding animals.
- AS.04.02.01.b. Compare and contrast the use of genetically superior animals in the production of animals and animal products.
- AS.04.02.02.a. Identify and summarize inheritance and terms related to inheritance in animal breeding (e.g., dominant, co-dominant, recessive, homozygous, heterozygous, etc.).
- **AS.04.02.04.a. Identify and summarize different needs of breeding animals based on their growth stages (e.g., newborn, parturition, gestation, gestation lengths, etc.).**
- AS.04.02.04.c. Create a plan to differentiate care of a species of breeding animals throughout their growth stages.
- AS.04.03 Apply scientific principles to breed animals.
- **AS.04.03.01.a. Identify and categorize natural and artificial breeding methods (e.g., natural breeding, artificial insemination, estrous synchronization, flushing, cloning, etc.).**
- AS.04.03.01.c. Select animal breeding methods based on reproductive and economic efficiency.
- AS.04.03.04.a. Examine the use of quantitative breeding values (e.g., EPDs, Performance records, pedigrees) in the selection of genetically superior breeding stock.

Essential Questions

- How do livestock & equine body systems affect reproductive traits and abilities?
- What types of reproductive management strategies/systems exist for each species?
- How do modern technologies increase efficiency in animal reproduction?
- How can we provide the best reproductive care for our school animals?

Content (Scope and Sequence)

- Comparative reproductive anatomy and functionality of horses, cattle, and sheep
 - Dairy cattle udder evaluation
- Reproductive wellness tasks (castration, behavioral training, Caslick's operation)
- Reproductive disorders

- Breeding schemes: pure breeding, crossbreeding, linebreeding, inbreeding, grading-up, composite breeding (advantages and disadvantages, analysis of pedigrees)
- Sire selection
- Reproductive timelines for horses, cattle, and sheep
- Breeding systems: Natural live cover, artificial insemination, embryo transfer, cloning
- Pregnancy determination: ultrasound, blood test, x-ray, palpation, visual assessment
- Calving, foaling, and lambing procedures: preparations, delivery, neonatal care and tasks
- Lamb growth analysis (weight tracking, economic value analysis)

Assured Experiences (Projects)

- Anatomy quizzes
- Hands-on evaluation of breeding schemes and sire selection
- Hands-on experience lambing, neonatal care, and lamb analysis on campus
- Dairy cattle udder evaluation (CDE prep)

Time Allocation

Approximately 4 weeks

Unit 6: Skeletal System

Performance Standards

- **AS.06.03.01.b. Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.**

Essential Questions

- How do the skeletal systems of cattle, sheep, horses, and humans differ, and how are they similar?
- How does an animal's skeletal build dictate its abilities?

Content (Scope and Sequence)

- Composition of the animal skeleton: axial & appendicular skeletons
 - Compare and contrast equine, bovine, and ovine skeletal systems
 - Equine dentition
 - Saddle fitting and other equestrian concerns dealing with bone structure
- Discuss the functions and limitations of equine joints, ligaments, and tendons

Assured Experiences (Projects)

- Anatomy quizzes
- Assembly of a full equine skeleton model

Time Allocation

Approximately 2 weeks

Unit 7: Equine & Livestock Health Management

Performance Standards

- **AS.07. Apply principles of effective animal health care.**
- **AS.07.01. Design programs to prevent animal diseases, parasites and other disorders and**
- **ensure animal welfare.**
- AS.07.01.01.c. Select and use tools and technology to meet specific animal health management goals.
- **AS.07.01.02.b. Perform simple health-check evaluations on animals and practice basic emergency response procedures related to animals.**
- AS.07.01.02.c. Determine when an animal health concern needs to be referred to an animal health professional.
- AS.07.01.03.b. Identify and describe common illnesses and disorders of animals based on symptoms and problems caused by wounds, diseases, parasites and physiological disorders.
- AS.07.01.03.c. Treat common diseases, parasites and physiological disorders of animals according to directions prescribed by an animal health professional.
- AS.07.01.04.a. Identify and summarize characteristics of causal agents and vectors of diseases and disorders in animals.
- AS.07.01.04.b. Research and analyze data to evaluate preventive measures for controlling and limiting the spread of diseases, parasites and disorders among animals.
- **AS.07.02. Analyze biosecurity measures utilized to protect the welfare of animals on a local, state, national, and global level.**
- AS.07.02.01.c. Design and evaluate a biosecurity plan for an animal production operation.
- AS.07.02.02.a. Identify and describe zoonotic diseases including their historical significance and potential future implications.
- AS.03.01.01.c. Perform diagnostic tests to detect health problems in animals.

Essential Questions

- How does maintaining healthy animals impact me and my community?
- What does a healthy animal look like, act like, and produce like?
- Who is responsible for keeping animals safe and healthy?
- How can we best manage the health care for livestock animals, using today's technology?

Content (Scope and Sequence)

- Preventative vs. reactive care
- Animal veterinary wellness visits and vaccination schedule
- Biosecurity - prevention of the spread of disease in animals and to people
 - Common equine, bovine, and ovine diseases and treatments

- o Zoonotic diseases
- o Evaluation of farm biosecurity plan
- Hoof anatomy and maintenance (horse, cattle, sheep, alpaca)
- Parasitology
 - o Common equine and ovine parasites, life cycles, diagnosis, treatment options, and prevention
 - Parasite check using FAMACHA and fecal egg count methods
 - Develop and implement parasite plan for school herd/flock
- Pasture management
 - o Pasture rotation
 - o Weed identification and control
- Animal mortality on farms
 - o Life expectancy and productive lifespan, statistics on causes of death in horses
 - o Euthanasia and legal disposal of animals
 - o Dealing with emotions and loss (stages of grief)
- Annual general wellness plan - calendar of tasks for care of all campus animals

Assured Experiences (Projects)

- Fecal flotation lab and FAMACHA testing hands-on
- Deworming treatments of farm animals
- Hoof maintenance of horse and sheep on campus

Time Allocation

Approximately 5 weeks

Unit 8: Wool Science & Fiber Processing

Performance Standards

- **AS.06.03.01.b. Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.**
- AS.06.03.03.b. Evaluate and select products from animals based on industry standards.

Essential Questions

- What animals produce the fibers we wear and create textiles with?
- How does wool become a finished item?
- What factors affect wool quality and production?
- How does caring for a wool-producing animal differ from meat or dairy animals?

Content (Scope and Sequence)

- Species and breeds of fiber-producing animals and the types of fibers they produce
- Steps from shearing to finished garment or item
- Fleece structure, evaluation, and judging

- Wool washing, carding, spinning (drop spindle & spinning wheel), wool craft (knit, crochet, felting, macrame, etc.)

Assured Experiences (Projects)

- Processing of a woolen item by hand from start to finish
- Fiber animal presentation

Time Allocation

Approximately 3 weeks

Unit 9: The Current U.S. Equine & Livestock Industry

Performance Standards

- AS.01. Analyze historic and current trends impacting the animal systems industry.
- AS.01.01.01.a. Identify and summarize the origin, significance, distribution and domestication of different animal species.
- AS.01.02.01.a. Identify and categorize terms and methods related to animal production (e.g., sustainable, conventional, humanely raised, natural, organic, etc.).
- **AS.01.01.02.c. Predict trends and implications of future development of the animal systems industry**

Essential Questions

- How has the domestication of animals impacted humans across time and around the world?
- How do livestock and horses contribute to the country's economy?
- How many horses, cattle, and sheep are currently raised in the United States?
- How are the livestock and equine industries changing with the trends?

Content (Scope and Sequence)

- Current populations & uses of of livestock in the United States, & Connecticut
- Historical and economic importance of the horse, cattle, and sheep in the U.S.
- Connecticut equine & livestock farming (farms, associations, programs, etc.)
- Cost of owning a horse in Connecticut
- Famous equestrians / horses
- Current events and trends in Animal Agriculture

Assured Experiences (Projects)

- CT Farms Project
- Statistics Quiz
- Famous Equestrian Project
- Cost of Owning a Horse project

Time Allocation

Approximately 3 weeks

Unit 10: Anatomy & Selection of Horses & Livestock

Performance Standards

- AS.06. Classify, evaluate and select animals based on anatomical and physiological characteristics.
- AS.06.02. Apply principles of comparative anatomy and physiology to uses within various animal systems.
- **AS.06.03. Select and train animals for specific purposes and maximum performance based on anatomy and physiology.**
- AS.06.03.01.c. Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction
- AS.06.03.03.c. Evaluate and select animals to produce superior animal products based on industry standards.
- AS.06.02.03.c. Apply knowledge of anatomical and physiological characteristics of animals to make production and management decisions.
- **AS.02.03.01.b. Compare and contrast desirable anatomical and physiological characteristics of animals within and between species**
- AS.02.03.02.b. Assess an animal to determine if it has reached its optimal performance level based on anatomical and physiological characteristics
- **CS.03.01. Performance Indicator: Communication: Demonstrate oral, written and verbal skills**

Essential Questions

- What determines what makes one animal “better” than another?
- How can we use universal industry terminology to best describe animal traits?
- How can we best communicate our assessment of an animal to another person?

Content (Scope and Sequence)

- External [comparative] anatomy of the horse, cow, and sheep
- Directional Terminology
- Principles of horse & livestock judging (priorities)
 - Breeding, performance, and market classes
- Horses:
 - Balance, Conformation (the ideal, and common faults), Quality, Breed Character
- Livestock:
 - Breeding vs. Market qualities & analysis
 - Comparative anatomy & vocabulary for cattle, sheep, and swine

- Developing a set of placing reasons (format, terminology, weighing faults)
- Delivering a set of oral reasons (public speaking)
- Specifics and practice for each CDE contest (horse, livestock, dairy, poultry)

Assured Experiences (Projects)

- Development & delivery of a set of oral reasons on a judging class
- External anatomy quizzes (horse, cattle, sheep)
- Hands-on anatomy identification
- Placement of breeding and market classes
- Apply selection analysis to our current animals on campus
- Anatomy & Selection Test
- Training for and participation in CT FFA Horse Judging, Livestock Judging, Dairy Judging, and/or Poultry Judging CDEs (Career Development Event contests)

Time Allocation

Approximately 5 weeks

Unit 11: Digestion & Nutrition of Livestock

Performance Standards

- AS.06.02. Apply principles of comparative anatomy and physiology to uses within various animal systems.
- **AS.03. Design and provide proper animal nutrition to achieve desired outcomes for performance, development, reproduction and/or economic production.**
- AS.03.01.01.b. Differentiate between nutritional needs of animals in different growth stages and production systems (e.g., maintenance, gestation, natural, organic, etc.).
- **AS.03.01.01.c. Assess nutritional needs for an individual animal based on its growth stage and production system.**
- AS.03.01.02.b. Correlate a species' nutritional needs to feedstuffs that could meet those needs.
- AS.03.01.02.b. Design and defend the use of a nutritional program by demonstrating the relationship between the nutrient requirements and the feedstuffs provided.
- AS.03.02 Analyze feed rations and assess if they meet the nutritional needs of animals.
- AS.03.02.02.b. Appraise the adequacy of feed rations using data from the analysis of feedstuffs, animal requirements and performance.
- AS.03.02.02.c. Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production.
- AS.03.03.02.a. Examine and summarize the meaning of various components of feed labels and feeding directions.
- **AS.03.03 Utilize industry tools to make animal nutrition decisions.**

Essential Questions

- How do ruminant and equine digestive systems differ, and differentiate what they can eat?
- Why do different animals require different types and amounts of feed?
- How can a manager provide the best nutritional and economical feed ration for their animals?

Content (Scope and Sequence)

- Comparative digestive anatomy & functionality (ruminant vs. non-ruminant)
- Equine Colic
- Nutritional needs and sources
 - Energy needs for life stages & reproduction
 - Animal weight determination
 - Feedstuffs: forages & concentrates
 - Feed Identification
 - Ration development & balancing
 - Pearson Square mathematics
 - Feed Plan Development & Evaluation
 - Poisonous plant identification

Assured Experiences (Projects)

- Ration formulation with Pearson square
- Hands-on poisonous plant identification
- Colic presentations
- Digestion & Anatomy Test

Time Allocation

Approximately 3 weeks

Unit 12: Equine & Livestock Facilities Design

Performance Standards

- AS.05.01. Design animal housing, equipment and handling facilities for the major systems of animal production.
- AS.05.01.01.a. Differentiate between the types of facilities needed to house and produce animal species safely and efficiently.
- **AS.05.01.01.c. Design an animal facility focusing on animal requirements, economic efficiency, sustainability, safety and ease of handling.**
- AS.05.02.01.b. Analyze animal facilities to determine if standards have been met.

Essential Questions

- What regulations and considerations exist when planning animal housing systems?
- What makes for an effective layout for a barn?
- What makes for an effective layout for an animal property?

Content (Scope and Sequence)

- USDA, state, & town guidelines for housing animals
- Considerations & goals when building animal housing
 - Budget, animal welfare, building codes, water access & drainage, safety, functionality, efficiency
- Barn styles & functionality
- Fencing styles & functionality
- Evaluating & redesigning existing structures
- Barn design - front elevation & floor plans (to scale)
- Facility design - bird's eye view drawing (to scale)
- Acreage size & fence line length determination

Assured Experiences (Projects)

- Barn & fencing styles identification
- Floor plan design (hand drawn or computer generated)
- Facility design (hand drawn or computer generated)

Time Allocation

Approximately 3 weeks

Unit 13: Behavior and Training of Domestic Animals (ECE)

Performance Standards

- AS.01. Analyze historic and current trends impacting the animal systems industry.
- AS.02. Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.
 - AS.02.01. Demonstrate management techniques that ensure animal welfare.
 - AS.02.01.02.c. Devise, implement and evaluate safety procedures and plans for working with animals by species using information based on animal behavior and responses.
- **AS.06.03. Select and train animals for specific purposes and maximum performance based on anatomy and physiology.**
- **AS.01.01.01.b. Evaluate and describe characteristics of animals that developed in response to the animal's environment and led to their domestication.**

Essential Questions

- How do animals learn, and how does that translate to training?
- How do animals communicate, with each other and with humans?
- What biological processes contribute to animal behavior?
- How do humans use knowledge of animal behavior to care for them?

Content (Scope and Sequence)

- Introduction to Animal Behavior & Learning
- Adaptive Purpose & Evolution of Behavior
- The Nervous System, Hormones & Behavior

- Animal Cycles, Biological Clocks
- Learning in Animals (respondent & operant behavior, conditioning, generalization, discrimination, motivation, sequences)
- Reinforcement & Shaping Behaviors
- Liberty Training
- Animal Communication
- Self-Defense Behaviors
- Sexual Behavior, Mating Systems
- Parental Care, Neonatal Behavior
- Feeding, Drinking, Elimination, Sleep, Grooming, Exploratory Behaviors
- How to perform an ethogram
- Behavioral Genetics
- Social Systems
- Ruminant Behavior (Cattle, Sheep, Goats, Camelids)
- Non-Ruminant Behavior (Horse, Donkey, Pigs)
- Carnivores (Dogs & Cats)
- Avian Flock behaviors
- Conflict & Thwarting
- Aggression & Fear in Livestock
- Technology & Behavior

Assured Experiences (Projects)

- Animal training project (three behaviors on cue)
- Quizzes & Exams

Time Allocation

Approximately 14 weeks

Culminating Activity

Midterm and Final Exams

The midterm and final exams are worth 10% each of the student's Trumbull High School course grade at the end of each year. Students will take midterm and final exams for each of the two years in the class.

Midterm and final exam grades are included in the "tests" portion of a student's ECE grade (60%).

COURSE CREDIT

This class meets for two class periods daily for two full years. Students earn two elective credits each year (total of four).

Students are also able to register for ECE credits through the University of Connecticut for two courses: The Horse Science ECE earns students three college credits, and the Behavior and Training ECE earns students three additional college credits.

PREREQUISITES

Completion of Agriscience 9 and Agriscience 10 freshman and sophomore Agriscience animal science coursework.

TEXTS

Animal Behavior, Michael D. Breed & Janice Moore, 2012

SUPPLEMENTARY MATERIALS/RESOURCES/TECHNOLOGY

Supplementary materials, resources, and technology will be piloted and included in an upcoming curriculum guide revision if determined they are needed.

CURRENT REFERENCES

National Agriculture, Food and Natural Resources (AFNR) Career Cluster Content Standards

ASSURED STUDENT PERFORMANCE RUBRICS

- Trumbull High School School-Wide Writing Rubric
- Trumbull High School School-Wide Problem-Solving Rubric
- Trumbull High School School-Wide Independent Learning and Thinking Rubric

Rubric 2: Write Effectively

Category/ Weight	Exemplary 4 Student work:	Goal 3 Student work:	Working Toward Goal 2 Student work:	Needs Support 1-0 Student work:
Purpose X_____	<ul style="list-style-type: none"> Establishes and maintains a clear purpose Demonstrates an insightful understanding of audience and task 	<ul style="list-style-type: none"> Establishes and maintains a purpose Demonstrates an accurate awareness of audience and task 	<ul style="list-style-type: none"> Establishes a purpose Demonstrates an awareness of audience and task 	<ul style="list-style-type: none"> Does not establish a clear purpose Demonstrates limited/no awareness of audience and task
Organization X_____	<ul style="list-style-type: none"> Reflects sophisticated organization throughout Demonstrates logical progression of ideas Maintains a clear focus Utilizes effective transitions 	<ul style="list-style-type: none"> Reflects organization throughout Demonstrates logical progression of ideas Maintains a focus Utilizes transitions 	<ul style="list-style-type: none"> Reflects some organization throughout Demonstrates logical progression of ideas at times Maintains a vague focus May utilize some ineffective transitions 	<ul style="list-style-type: none"> Reflects little/no organization Lacks logical progression of ideas Maintains little/no focus Utilizes ineffective or no transitions
Content X_____	<ul style="list-style-type: none"> Is accurate, explicit, and vivid Exhibits ideas that are highly developed and enhanced by specific details and examples 	<ul style="list-style-type: none"> Is accurate and relevant Exhibits ideas that are developed and supported by details and examples 	<ul style="list-style-type: none"> May contain some inaccuracies Exhibits ideas that are partially supported by details and examples 	<ul style="list-style-type: none"> Is inaccurate and unclear Exhibits limited/no ideas supported by specific details and examples
Use of Language X_____	<ul style="list-style-type: none"> Demonstrates excellent use of language Demonstrates a highly effective use of standard writing that enhances communication Contains few or no errors. Errors do not detract from meaning 	<ul style="list-style-type: none"> Demonstrates competent use of language Demonstrates effective use of standard writing conventions Contains few errors. Most errors do not detract from meaning 	<ul style="list-style-type: none"> Demonstrates use of language Demonstrates use of standard writing conventions Contains errors that detract from meaning 	<ul style="list-style-type: none"> Demonstrates limited competency in use of language Demonstrates limited use of standard writing conventions Contains errors that make it difficult to determine meaning

Rubric 3: Problem Solving through Critical Thinking

Category/Weight	Exemplary 4	Goal 3	Working Toward Goal 2	Needs Support 1-0
Understanding X_____	Student demonstrates clear understanding of the problem and the complexities of the task	Student demonstrates sufficient understanding of the problem and most of the complexities of the task	Student demonstrates some understanding of the problem but requires assistance to complete the task	Student demonstrates limited or no understanding of the fundamental problem after assistance with the task
Research X_____	Student gathers compelling information from multiple sources including digital, print, and interpersonal	Student gathers sufficient information from multiple sources including digital, print, and interpersonal	Student gathers some information from few sources including digital, print, and interpersonal	Student gathers limited or no information
Reasoning and Strategies X_____	Student demonstrates strong critical thinking skills to develop a comprehensive plan integrating multiple strategies	Student demonstrates sufficient critical thinking skills to develop a cohesive plan integrating strategies	Student demonstrates some critical thinking skills to develop a plan integrating some strategies	Student demonstrates limited or no critical thinking skills and no plan
Final Product and/or Presentation X_____	Solution shows deep understanding of the problem and its components. Solution shows extensive use of 21st Century Technology Skills.	Solution shows sufficient understanding of the problem and its components. Solution shows sufficient use of 21st Century Technology Skills.	Solution shows some understanding of the problem and its components. Solution shows some use of 21st Century Technology Skills.	Solution shows limited or no understanding of the problem and its components. Solution shows limited or no use of 21st Century Technology Skills.

Rubric 5: Independent Learners And Thinkers

Category/Weight	Exemplary 4	Goal 3	Working Toward Goal 2	Needs Support 1-0
Proposal X _____	Student demonstrates a strong sense of initiative by generating compelling questions, creating uniquely original projects/work.	Student demonstrates initiative by generating appropriate questions, creating original projects/work.	Student demonstrates some initiative by generating questions, creating appropriate projects/work.	Student demonstrates limited or no initiative by generating few questions and creating projects/work.
Independent Research & Development X _____	Student is analytical, insightful, and works independently to reach a solution.	Student is analytical, and works productively to reach a solution.	Student reaches a solution with direction.	Student is unable to reach a solution without consistent assistance.
Presentation of Finished Product X _____	Presentation shows compelling evidence of an independent learner and thinker. Solution shows deep understanding of the problem and its components. Solution shows extensive and appropriate application of 21-Century Skills.	Presentation shows clear evidence of an independent learner and thinker. Solution shows adequate understanding of the problem and its components. Solution shows adequate application of 21-Century Skills.	Presentation shows some evidence of an independent learner and thinker. Solution shows some understanding of the problem and its components. Solution shows some application of 21-Century Skills.	Presentation shows limited or no evidence of an independent learner and thinker. Solution shows limited or no understanding of the problem. Solution shows limited or no application of 21-Century Skills.