Ledyard Agri-Science & Technology Program

Ag III & IV Animal Systems Curriculum

Agri-Science III & IV
ANIMAL SYSTEMS (AS)

Agri-Science III & IV students will focus on those areas of interest they have developed over the previous two or three years and concentrate on developing skills more specific to those areas of interest.

Animal Systems (AS): encompasses the study of animal systems, including content areas such as life processes, health, nutrition, genetics, management, and processing, as applied to small animals, aquaculture, exotic animals, livestock, dairy, horses and/or poultry. Students completing a program of study in this pathway will demonstrate competence in the application of principles and techniques for the development, application and management of animal systems in Agriculture, Food, and Natural Resources (AFNR) settings.

Students are expected to follow a specific course of study related to their career interests and goals that will prepare them for further study after high school or direct entry into the workplace. Some students may elect to pursue study in two diverse areas. Course selection is developed with the assistance of the Supervised Agricultural Experience (SAE) advisors and classroom teachers. Agri-Science III & IV students will continue to have opportunities to further develop leadership skills through participation in the National FFA Organization. Students are encouraged to participate in FFA Career Development Events (CDEs) in order to further develop skills.

ANIMAL SYSTEMS COURSES

Supervised Agricultural Experience (SAE)
Companion Animal Management
Livestock Management
Animal Behavior & Training
Livestock Production
Farm to Table
Animal Diseases
Veterinary Science

Course Title	Supervised Agricultural Experience (SAE)
Agriculture Pathway	All agricultural pathways
Length of Course	On-Going
Ledyard High School Vision of the Graduate	Demonstrate an ability to work effectively with others, sharing ideas, acknowledging one another's strengths, and collaborating to produce presentations, projects, performances, or events. Demonstrate an ability to solve problems of varying complexity across a variety of content areas. Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas.
Course Overview	SAE is a vital aspect of agricultural education. During Agri-Science I students begin to develop a plan for supervised work experience relating to their interests and career goals. All Agri-Science students must have an approved SAE program in place by July 1 at the start of the Agri-Science II year. SAE advisors work with individual students, parents, work-site mentors, and employers to ensure student activities are appropriate, meet student needs, and are in compliance with state labor laws. All students work with their SAE advisors to complete the Universal Structured Work-Based Learning Plan. In addition, some students must complete the Connecticut Department of Labor forms LED 75-1 (Workplace Learning Experiences for Minor Students in Hazardous Occupations) or the LED 31-23 (Workplace Learning Experiences for Minor Students Ages 14 or 15 in Non-Hazardous Occupations), or Unpaid Work Experience forms.
Units of Study	1. Develop an Approved Supervised Agricultural Experience (SAE) Program 2. Record Keeping 3. Employability Skills

Unit 1	Develop an Approved Supervised Agricultural Experience (SAE) Program
Essential Questions	1. What is an SAE and why is it important? 2. What are the benefits of gaining employability skills for career growth?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	CRP.10.01.02.c. Match potential career opportunities in career clusters with personal interests, talents, goals and preferences. CRP.10.02.02.a. Identify methods for setting goals for personal improvement and continuous growth in a career area (e.g., SMART goals, training, professional development, etc.). CRP.10.03.02.a. Identify trusted individuals to consult with on setting and achieving career and personal goals (e.g., counselors, teachers, mentors, coaches, community leaders, etc.). CS.03.01.02.a. Summarize the importance of safety, health and environmental management in the workplace.
Common Core State Standards	WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience SL.11-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	CRP.04.02.01.a. Research and summarize the purpose of different forms of written and visual communication in formal and informal settings (e.g., letters, emails, reports, social media, graphics, diagrams, etc.). CRP.10.02.01.a. Categorize career advancement requirements for potential careers (e.g., degrees, certification, training, etc.). CS.03.03.04.c. Create a plan to mitigate the level of contamination or injury identified as a risk in the workplace.
Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text.

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Identify local agricultural work experiences	- Research and identify local 501(c)3 non profit organizations - Locate local agricultural businesses - Determine qualifications needed for employment - Call to inquire about agricultural position	CRP.04.02.01.a. CRP.10.02.01.a. CRP.10.03.02.a. SL.11-12.4 RST.11-12.4
Develop an appropriate SAE work experience	- Identify agricultural interests - Develop work experience activities/projects in line with career goals - Write SMART goals for SAE growth and improvement - Obtain approval from parents/guardians and SAE advisor - Meet with SAE advisor during the school year and at least once during the summer	CRP.10.01.02.c. CRP.10.02.02.a. CS.03.03.04.c. WHST.11-12.4 RST.11-12.4 SL.11-12.4
Complete appropriate work experience forms utilizing AFNR standards	- Identify key skills necessary to complete the Structured Work-Based Learning Form - Complete appropriate CT Departments of Labor and Education forms for student work experience	CS.03.01.02.a. WHST.11-12.4 RST.11-12.4

Unit 2	Record Keeping
Essential Questions	1. Why is record keeping essential to an SAE experience? 2. Why is documenting SAE experiences beneficial to a student?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	CRP.03.02.01.a. Research and examine components in a personal financial management plan (e.g., income, expense, budgeting, savings, credit, etc.). CRP.09.02.01.a. Identify and summarize personal management skills necessary to function effectively in the workplace (e.g., time management, planning, prioritizing, etc.). CRP.13.03.01.c. Apply for a chapter, state and national proficiency award that corresponds with an SAE program.
Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience MP4 Model with mathematics

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	ABS.02.02.01.a. Compare and contrast the different types of financial reports (e.g., income statements, cash flow statements, equity statements, etc.) and their frequency of use (e.g., daily, weekly, monthly, quarterly, annual) for monitoring AFNR business performance.
Common Core State Standards	MP6 Attend to precision

Objectives	Activities	CT AFNR, NGSS, CCSS
Develop and maintain SAE records	- Document time spent in SAE & FFA activities, skills learned, income, and expenses - Utilize online record keeping program (AET) to document records - Provide evidence of work using photographs, videos, and journals	CRP.03.02.01.a. CRP.09.02.01.a. ABS.02.02.01.a. RST.11-12.4 WHST.11-12.4 MP4
Apply for SAE and FFA awards	- Research SAE and FFA awards applicable to SAE experiences - Calculate SAE hours worked, income and expenses - Complete local, state, and national degree and award applications as applicable	CRP.13.03.01.c. RST.11-12.4 WHST.11-12.4 MP6

Unit 3	Employability Skills

Essential Questions	1. Why is it important to develop agricultural employability skills?
	2. What types of skills are needed for an entry level agricultural position?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems. CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.). CS.03.04.01.a. Identify and differentiate the appropriate protective equipment for the safe use and operation of specific tools and equipment (e.g. PPE, etc.). CS.03.04.02.a. Identify standard tools, equipment and safety procedures related to AFNR tasks. CS.03.04.03.a. Read and interpret operating instructions related to operation, storage and maintenance of tools and equipment related AFNR tasks. CS.05.01.03.a. Research and summarize specific tools (e.g., resumes, portfolios, cover letters, etc.) and processes (e.g., interviews, applications, etc.) needed to pursue a career in an AFNR pathway.
Common Core State Standards	WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience SL.11-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	CRP.01.01.02.a. Distinguish personal levels of responsibility, which can be applied in the workplace and community. CRP.10.03.01.a. Summarize ways that input and/or advice from career area experts could assist in planning personal career goals. CS.05.01.01.b. Create a personal plan outlining goals and steps to obtain a career in an AFNR pathway.
Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text.

Objectives	Activities	CT AFNR, NGSS, CCSS
Demonstrate effective and appropriate agricultural employability skills	- Work safely and effectively in an SAE experience - Select and use appropriate PPE for SAE experiences - Report broken, chipped or cracked PPE to manager - Select and use appropriate tools and equipment for SAE experiences according to manufacturer's directions - Maintain professionalism and confidentiality in the workplace - Model listening and problem solving skills	CRP.01.01.02.a. CRP.08.02.02.b. CRP.09.03.02.c. CS.03.04.01.a. CS.03.04.02.a. CS.03.04.03.a. WHST.11-12.4 RST.11-12.4 SL.11-12.4
Demonstrate improvement and growth in career skills	- Provide evidence of work using photographs, videos, and journals - Write an annual summary of activities - Create quarterly and yearly SAE goals to grow or improve SAE experience - Share SAE experiences to educate others about additional options for SAE projects	CRP.08.02.02.b. CRP.09.03.02.c. CRP.10.03.01.a. CS.05.01.01.b. WHST.11-12.4 RST.11-12.4 SL.11-12.4
Complete job application documents	- Research agricultural job openings - Create a cover letter and a resume - Complete a job application - Participate in a job interview	CRP.09.03.02.c. CRP.10.03.01.a. CS.05.01.03.a. WHST.11-12.4 RST.11-12.4 SL.11-12.4

Vocabulary:

501 (c) 3	Paid Placement
Community Service	Placement
Entrepreneurship	SAE
Expenses	Scope
Hazardous Occupations	Structured Work-Based Learning Plan
Income	Volunteer
Liability	Work-site Mentor
Non-Profit Entity	

Assessments:
Record checks
Annual summaries
On-site visits by advisor
SAE rubric

Connections to College/Career Readiness:
Hands-on agricultural skills and knowledge for job placement

Resources/Materials:

SAE Manual
Online record keeping program- www.theaet.com
SDE/SDOL employment forms LED 75-1, LED 31-23, Unpaid

Course Title	Companion Animal Management
Agriculture Pathway	Animal Systems
Length of Course	One Semester
Ledyard High School Vision of the Graduate	Demonstrate an ability to work effectively with others, sharing ideas, acknowledging one another's strengths, and collaborating to produce presentations, projects, performances, or events. Demonstrate an ability to solve problems of varying complexity across a variety of content areas. Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas.
Course Overview	Students will learn how to protect pet owners and their pets from harm, injury, or suffering during emergencies, by learning prompt, effective actions and care that will safeguard the life of an injured pet. Students will learn how to recognize emergencies, restrain animals, perform CPR, abdominal thrusts, rescue breathing and bandage wounds. Students will perform physical examinations on the school animals. Basic concepts of companion animals will include: safety, domestication, ethical issues, nutrition, physiology, health and management. Students will have the opportunity to explore the field of kennel management and develop skills and competencies appropriate to an entry level position in a dog kennel, dog grooming facility, animal control agency or animal shelter. Students will groom a variety of dogs, and run a canine day camp. Students will complete the requirements that may qualify them to earn the Animal Care Technologies Certification in Kennel Management, Certification in Animal First Aid and CPR.
Units of Study	1. The Pet Industry 2. Ethical Issues 3. Companion Animal Management Principles

Unit 1	The Pet Industry
Essential Questions	1. How do I choose the pet that is right for me? 2. What does it take to offer successful canine services through the AgSci program? 3. How do I market and sell a product or service in the companion animal industry?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	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. AS.01.01.02.b. Describe the historical and scientific developments of different animal industries and summarize the products, services and careers associated with each. 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.05.01.01.a. Differentiate between the types of facilities needed to house and produce animal species safely and efficiently. AS.06.01.03.b. Analyze the visual characteristics of an animal or animal product and select correct classification terminology when referring to companion and production animals. AS.06.03.01.b. Compare and contrast desirable anatomical and physiological characteristics of animals within and between species. CRP.01.01.02.c. Model personal responsibility in workplace and community situations. CRP.04.01.01.b. Analyze use of verbal and non-verbal communication strategies in workplace situations. CS.05.01.01.a. Identify and summarize the steps to pursue a career in an AFNR pathway (e.g., self-assessment, set goals, etc.).
Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.01.02.02.c. Devise and evaluate marketing plans for an animal agriculture product or service. AS.04.01.02.c. Evaluate and select animals for reproductive readiness. 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.07.02.02.a. Identify and describe zoonotic diseases including their historical significance and potential future implications. CRP.04.01.02.c. Evaluate personal strengths and areas for growth with regard to speaking formally and informally with

	clarity, logic, purpose and professionalism, and identify ways to improve.
Common Core State Standards	RST.11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Evaluate various species of companion animal's suitability for pet ownership	- Explore the domestication of various species of companion animals - Create a presentation/care manual to educate peers on the proper maintenance, health care and ownership of various companion animal species - Demonstrate species and breed identification of companion animals - Propose the addition of animals to the AgriScience program	AS.01.01.01.b. AS.03.01.01.b. AS.05.01.01.a. AS.06.01.03.b. AS.06.03.01.b. RST.11-12.4 AS.04.01.02.c. AS.04.02.04.a. AS.07.02.02.a. WHST.11-12.4 CRP.04.01.02.c.
Demonstrate skills critical to kennel management/maintenance	- Obtain Animal Care Technologies' School Certification in Kennel Maintenance - Observe videos of canine behavior and critique human reactions and training methods applied - Review applications and evaluate temperaments of dogs wishing to be enrolled in the AgSci canine program - Demonstrate the ability to properly care for and groom dogs enrolled in AgSci canine program - Properly handle and restrain dogs enrolled in the AgSci canine program	AS.01.01.02.b. AS.03.01.01.b. AS.05.01.01.a. AS.06.03.01.b. RST.11-12.4 AS.07.02.02.a.
Create a business proposal for a pet industry product or service	- Evaluate successful companion animal industry businesses - Research and create a business proposal for a companion animal industry product or service - Apply mathematical principles to determine cost of products, profit goals and properly market and sell products or services - Create and sell selected products and services to LHS community	AS.01.01.02.b. AS.06.01.03.b. AS.01.02.02.c. CRP.01.01.02.c. CRP.04.01.01.b. RST.11-12.7. WHST.11-12.4

	● Reflect upon and evaluate the success of produced items and services performed	CRP.04.01.02.c.
Explore careers in the pet industry	● Review [American Veterinary Medical Association official job descriptions](link) and preview [career video](link) ● Differentiate between job responsibilities of veterinary and companion animal industry professions ● Reflect on guest speaker presentations regarding careers in the pet industry	AS.01.01.02.b. CRP.01.01.02.c. CRP.04.01.01.b. CS.05.01.01.a.

Unit 2	Ethical Issues
Essential Questions	1. What current issues exist regarding ownership of companion animals? 2. How can you demonstrate mutual respect with a person whose views differ from yours about an animal ethical issue?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.01.a. Explain the implications of animal welfare and animal rights for animal systems. AS.02.01.03.a. Distinguish between animal husbandry practices that promote animal welfare and those that do not. CRP.09.01.02.c. Model characteristics and actions of ethical and effective leaders in workplace and community situations (e.g., integrity, self-awareness, etc.). AS.05.02.01.b. Analyze animal facilities to determine if standards have been met. AS.05.02.02.a. Distinguish between the types of laws and regulations pertaining to animal systems.
Common Core State Standards	SL.11-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. RST.11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.01.03.01.b. Analyze the structure of laws governing animal industries, international trade and animal production policies. AS.02.01.01.b. Design programs that assure the welfare of animals and prevent abuse or mistreatment. AS.02.02.02.b. Analyze consumer concerns with animal production practices relative to human health. CRP.04.01.01.c. Evaluate other's verbal and non-verbal communications (e.g., speeches, presentations, oral reports, etc.) and propose recommendations for improvement in clarity, logic, purpose and professionalism.
Common Core State Standards	WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. RST.11-12.9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

Objectives	Activities	CT AFNR, NGSS, CCSS
Differentiate between animal welfare and animal rights	● Analyze differing definitions by various industry organizations of animal rights and welfare ● Compose acceptable definitions to be applied to this class and lead a class discussion ● Research animal rights and welfare groups to gain an understanding of their missions and develop an individual viewpoint on the organizations	AS.02.01.01.a. AS.02.01.03.a. RST.11-12.7. AS.01.03.01.b. AS.02.02.02.b. AS.05.02.01.b. AS.05.02.02.a. RST.11-12.9.
Investigate current ethical issues in the companion animal industry	● Research a specific ethical issue involving a species of companion animal and create a unbiased presentation on the topic ● Review peer prepared presentations of other ethical topics and formulate your opinion on the issue	AS.02.01.01.a. AS.02.01.03.a. RST.11-12.7. AS.01.03.01.b. AS.02.01.01.b. AS.02.02.02.b. AS.05.02.01.b. AS.05.02.02.a. CRP.04.01.01.c. CRP.09.01.02.c. WHST.9-12.7 SL.11-12.4 RST.11-12.9.

Unit 3	Companion Animal Management Principles
Essential Questions	1. How do I safely work with and around companion animals? 2. What preventative and emergent healthcare measures are important to animal ownership?

Priority Standards Assessed in Learning	

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.02.b. Analyze and document animal welfare procedures used to ensure safety and maintain low stress when moving and restraining animals. AS.02.01.04.c. Handle and work with domestic livestock, horses, and companion animals safely. AS.06.03.01.a. Identify and summarize how an animal's health can be affected by anatomical and physiological disorders. AS.07.01.02.c. Determine when an animal health concern needs to be referred to an animal health professional. AS.07.01.01.b. Describe and demonstrate the proper use and function of specific tools and technology related to animal health management. AS.07.01.02.b. Perform simple health-check evaluations on animals and practice basic emergency response procedures related to animals. AS.07.01.03.a. List and summarize the characteristics of wounds, common diseases, parasites and physiological disorders that affect animals. AS.08.02.02.b. Implement and evaluate the effectiveness of methods to ensure optimal environmental conditions for animals.
Common Core State Standards	RST.11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. SL 11-12.1. Initiate and participate effectively in a range of collaborative discussions (one on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Supporting Standards	

Connecticut Agriculture, Food, and Natural Resources Standards	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.02.02.01.b. Utilize tools, technology and equipment to perform animal husbandry and welfare tasks. AS.05.01.03.a. Recognize illnesses and disorders based on symptoms and problems caused by disease, parasites, and disorders among companion, lab and/or domestic animals.
Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text.

Objectives	Activities	CT AFNR, NGSS, CCSS
Demonstrate safety when working with and around animals	- Recognize animal body language and react appropriately - Demonstrate specific safety restraints for various companion animal species - Demonstrate proper use of restraint tools	AS.02.01.02.b. AS.02.01.04.c. RST.11-12.3. AS.02.01.02.c. AS.02.02.01.b. RST.11-12.4
Demonstrate knowledge of preventative health care measures and the ability to perform associated skills	- Perform physical examinations on AgSci program animals as well as dog service clients - Demonstrate the ability to obtain animal vital signs with and without use of appropriate veterinary tools - Collect, organize and evaluate health data in the animal's medical record	AS.02.01.02.b. AS.02.01.04.c. AS.06.03.01.a. AS.07.01.02.c. AS.07.01.01.b. AS.07.01.02.b. AS.07.01.03.a. RST.11-12.3. SL 11-12.1. AS.02.01.02.c. AS.02.02.01.b. AS.05.01.03.a. RST.11-12.4
Demonstrate the ability to address emergent health care issues with pets	- Assemble a pet first aid kit - Recognize animal emergencies and react appropriately - Demonstrate proper procedures for abdominal thrusts, rescue breaths and CPR - Demonstrate how to clean and bandage a wound, apply a tourniquet and splint a limb	AS.02.01.02.b. AS.06.03.01.a. AS.07.01.02.c. AS.07.01.01.b. AS.07.01.02.b. AS.07.01.03.a. RST.11-12.3. SL 11-12.1. AS.02.01.02.c. AS.05.01.03.a. RST.11-12.4
Maintain safe and clean animal environments	- Perform maintenance tasks in the companion animal laboratory - Care for the AgriScience program's animals - Properly document animal care activities in animal records	AS.02.01.02.b. AS.02.01.04.c. AS.07.01.02.c.

		AS.07.01.01.b.
		AS.07.01.02.b.
		AS.07.01.03.a.
		RST.11-12.3.
		AS.02.01.02.c.
		AS.02.02.01.b.
		AS.05.01.03.a.

Vocabulary:	SOAP	Rabies
Palpate	POMR	Lyme
Ascult	Signalment	Leptospirosis
Gregarious	BCS	Bordetella
Vital Signs	Halitosis	Profit
CRT (Capillary Refill Time)	Designer Breed	Animal Rights
BAR	DA2P(L)	Animal Welfare

Assessments:
Lab activities
Class assignments
Quizzes/Tests
Projects

Connections to College/Career Readiness:
ANSC 1676 (Introduction to Companion Animals- 3 credits) through University of Connecticut
VET 100 (Introduction to Animal Care- 2 credits) through Middlesex Community College
Certification in Kennel Maintenance through Animal Care Technologies
Certification in Animal First Aid and CPR through ProTrainings

Resources/Materials:
Companion animals housed at LHS

LHS/LPS staff dogs that attend LHS AgSci canine service program
Laboratory tools and supplies (microscopes, microscope slides and cover slips, etc.)
Veterinary tools and equipment (stethoscopes, otoscopes, thermometer, bandaging materials, other medical supplies, etc.)
Animal management tools and equipment (leashes, muzzles, halters, scale, etc.)
Local veterinary hospitals and other companion animal industry businesses for field trips
Companion animal industry professionals as guest speakers
Animal Care Technologies web-based training programs
ProTrainings web-based training program
Middlesex Community College's Veterinary Technology program laboratory space and the college library's print and digital resources

Small Animal Care & Management 3rd Edition   Canine Breed Standards
Dean M. Warren 2010   The American Kennel Club
ISBN : 978-4180-4105-2

Exotic Animal Care & Management   Veterinary Parasitology
Vicki Judah, Kathy Nuttall 2008   William J. Foreyt
ISBN : 978-1-4180-4198-4   ISBN: 97808138241912

Merck/Merial Manual for Pet Health   Notes from the Grooming Table
Cynthia M. Kahn 2007   Melissa Verplank
ISBN: 978-0-911910-99-5   ISBN: 0-9754128-0-9

Course Title	Livestock Management
Agriculture Pathway	Animal Systems
Length of Course	One Semester
Ledyard High School Vision of the Graduate	Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas. Demonstrate an ability to work effectively with others, sharing ideas, acknowledging one another's strengths, and collaborating to produce presentations, projects, performances, or events.
Course Overview	Students will gain knowledge and skills helpful for the raising, caring and managing livestock used for food production. Students will research farm business management strategies and utilize those skills to assist in marketing the school's farm products.
Units of Study	1. Livestock Handling 2. Livestock Species 3. Farm Business Management

Unit 1	Livestock Handling
Essential Questions	1. Why is it important to learn how to safely and humanely handle livestock? 2. What tools/equipment and strategies are used to handle a variety of livestock species?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.03.a. Distinguish between animal husbandry practices that promote animal welfare and those that do not. AS.02.01.04.c. Handle and work with domestic livestock, horses, and companion animals safely. AS.02.01.05.b. Explain the importance of biosecurity in relation to domestic livestock and companion animals. AS.02.02.01.b. Utilize tools, technology and equipment to perform animal husbandry and welfare tasks.
Next Generation Science Standards	HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.
Common Core State Standards	WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST 11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. MP6 Attend to precision

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.05.01.01.a. Differentiate between the types of facilities needed to house and produce animal species safely and efficiently. AS.08.02.01.a. Identify and summarize methods for ensuring optimal environmental conditions for animals.
Next Generation Science Standards	HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
Common Core State Standards	SL.11-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience and task

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Handle livestock safely	- Demonstrate proper hygiene and sanitation - Safely and humanely handle livestock - Use equipment safely and effectively - Perform and use the quick release knot when tying animals to a post - Interpret animal behavior while safely and humanely handling animals	AS.02.01.04.c AS.02.02.01.b HS-LS2-8 SL.11-12.4
Assess livestock health and suggest appropriate protocol	- Perform physical examinations on livestock and document the results - Calculate heart rate and respiratory rates on livestock - Use veterinary tools and equipment safely and correctly - Evaluate the livestock for internal and external parasites and suggest appropriate prevention and treatment	AS.02.01.04.c AS.02.02.01.b HS-LS1-3 WHST.11-12.4 MP6 SL.11-12.4
Demonstrate proper feeding, watering, health care, enrichment and cleaning of animals	- Feed animals according to their nutritional requirements - Monitor and replenish water supply as directed - Properly store animal feed - Recognize healthy and sick livestock - Report and document any animal health concerns - Select appropriate enrichment for livestock species to maintain animal welfare standards - Distinguish between animal welfare and animal rights as it relates to proper care and management	AS.02.01.03.a AS.02.01.04.c AS.02.02.01.b AS.08.02.01.a WHST.11-12.4 RST 11-12.4 SL.11-12.4
Maintain biosecurity measures at the school farm	- Explain the importance of biosecurity in livestock facilities - Research and interpret livestock biosecurity plans - Implement biosecurity measures while caring for and handling livestock	AS.02.01.03.a AS.02.01.05.b AS.05.01.01.a WHST.11-12.4 RST 11-12.4 SL.11-12.4

Unit 2	Livestock Species
Essential Questions	1. What is the purpose/use for each livestock species? 2. How do you care for and manage a livestock farm?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.01.01.01.a. Identify and summarize the origin, significance, distribution and domestication of different animal species. AS.03.02.01.c. Select appropriate feedstuffs for animals based on a variety of factors (e.g., economics, digestive system and nutritional needs, etc.). AS.03.02.02.a. Examine the importance of a balanced ration for animals based on the animal's growth stage (e.g., maintenance, newborn, gestation, lactation, etc.). AS.04.01.02.a. Compare and contrast how age, size, life cycle, maturity level and health status affect the reproductive efficiency of male and female 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.05.01.03.a. Recognize illnesses and disorders based on symptoms and problems caused by disease, parasites, and disorders among companion, lab and/or domestic animals. AS.06.01.01.b. Explain how animals are classified using a taxonomic classification system. AS.07.02.02.a. Identify and describe zoonotic diseases including their historical significance and potential future implications.
Next Generation Science Standards	HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
Common Core State Standards	WHST. 11-12.d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as the expertise of likely readers. RST 11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. MP6 Attend to precision

Supporting Standards	
Connecticut Agriculture, Food, and Natural Resources Standards	AS.01.02.03.a. Summarize the types, purposes, and characteristics of effective record keeping and documentation practices for animal systems enterprises (e.g., managing records for animal identification, feeding, breeding, treatment, income/expense, etc.). AS.02.02.03.a. Identify and describe animal tracking systems used in animal systems (e.g., livestock, poultry, companion animal, exotics, etc.). AS.03.03.02.a. Examine and summarize the meaning of various components of feed labels and feeding directions.
Next Generation Science Standards	HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
Common Core State Standards	SL.11-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience and task.

Objectives	Activities	CT AFNR, NGSS, CCSS
Describe key factors in livestock management	● Identify various breeds of beef cattle, dairy cattle, equine, sheep, goats, alpacas, swine and poultry ● Classify livestock into their respective taxonomic classification system ● Recognize the connection between appropriate management and healthy animals ● Outline steps for effectively raising livestock from birth to harvest ● Identify common livestock diseases and parasites and recommend a protocol for treatment ● Research and explain livestock zoonotic diseases and recommend a protocol for preventing zoonotic diseases on the school farm ● Record livestock management data obtained from working with school animals ● Research and identify the livestock identification system for each livestock species	AS.01.01.01.a AS.05.01.03.a AS.06.01.01.b AS.07.02.02.a AS.01.02.03.a AS.02.02.03.a WHST. 11-12.d RST 11-12.4 SL.11-12.4
Calculate a balanced ration and determine feed costs	● Identify and describe the six basic food nutrients including the composition and their function ● Interpret feed labels	AS.03.02.01.c. AS.03.02.02.a AS.03.03.02.a

	● Balance a ration using the Pearson Square for growth, maintenance, production, reproduction, fattening and work animals ● Calculate feed costs and nutritional requirements for livestock	WHST. 11-12.d RST 11-12.4 MP6
Describe and evaluate the ruminant, nonruminant and cecal fermenter digestive tracts	● Identify and describe the digestive organs for a ruminant, nonruminant and a cecal fermenter digestive system ● Research an animal digestive system and create a multimedia presentation which includes: digestive system parts, how food passes through the digestive tract, how food breaks down with the acids and enzymes based on the types of feed the animal consumes	AS.03.02.01.c. WHST. 11-12.d RST 11-12.4 SL.11-12.4
Evaluate and select quality concentrates and roughages	● Identify characteristics of quality concentrates and forage crops ● Select superior examples from various samples of roughages ● List and discuss the steps that are part of the process of the production of grass and legume hay and corn, grass and legume silage	AS.03.02.01.c. WHST. 11-12.d RST 11-12.4
Research and explain the role that animal reproduction has on livestock management	● Locate and explain the function of the organs of the male and female reproductive tracts and discuss how they change through different stages of life ● Recognize the value of selective breeding in a livestock program through either artificial insemination or natural breeding ● Illustrate the steps in the formation and development of male and female gametes ● Summarize the stages of embryo and fetal development in livestock ● Identify abnormalities in parturition and suggest corrective measures in dystocia situations	AS.04.01.02.a AS.04.03.01.a AS.05.01.03.a HS-LS4-4 HS-LS3-1 WHST. 11-12.d RST 11-12.4 SL.11-12.4

Unit 3	Farm Business Management
Essential Questions	1. What does it take to manage and run a livestock farm? 2. What are the regulations to start a business?

Priority Standards Assessed in Learning	
Connecticut Agriculture, Food, and Natural Resources Standards	ABS.01.02.01.a. Read and interpret statements of purpose (e.g., vision, mission statement, charter, etc.). ABS.01.02.02.a. Identify the meaning and importance of goals and objectives in AFNR business enterprises. ABS.02.02.01.a. Compare and contrast the different types of financial reports (e.g., income statements, cash flow statements, equity statements, etc.) and their frequency of use (e.g., daily, weekly, monthly, quarterly, annual) for monitoring AFNR business performance. ABS.02.02.03.a. Define and classify different types of taxes that may be paid by AFNR businesses (e.g., income, property, sales, employment, estate, etc.). ABS.01.03.02.a. Identify and interpret appropriate local, state, federal, international and industry regulations that impact the management and operation of AFNR businesses. ABS.04.01.02.a. Categorize the characteristics of the types of ownership structures used in AFNR businesses (e.g., sole proprietorships, cooperatives, partnerships and corporations).
Common Core State Standards	WHST. 11-12.d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as the expertise of likely readers. RST 11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. MP6 Attend to precision

Supporting Standards	
Connecticut Agriculture, Food, and Natural Resources Standards	ABS.01.03.01.a. Define and provide examples of management skills used to organize an AFNR business (e.g., management types, organizational structures, time management techniques, conducting business agreements, etc.). ABS.01.03.03.a. Identify and evaluate the presence or lack of ethical standards in planning and operating AFNR businesses.
Common Core State Standards	SL.11-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience and task

Objectives	Activities	CT AFNR, NGSS, CCSS
List regulatory items that need to be evaluated before starting a business	● Research and discuss the local and state regulations for starting a business in Southeastern Connecticut ● Research, interpret and discuss a farm business plan ● List six factors that affect the starting of an agribusiness	ABS.01.02.01.a. ABS.01.02.02.a ABS.01.03.02.a WHST. 11-12.d RST 11-12.4 SL.11-12.4
Demonstrate skills critical to starting a livestock business	● Create a financial report for a farm business plan ● Research and decide upon which type of ownership is appropriate for the farm business plan	ABS.02.02.01.a ABS.04.01.02.a WHST. 11-12.d RST 11-12.4 MP6 SL.11-12.4
Create a farm business plan	● Apply the principles of branding to select a business name ● Develop a cash flow statement ● Write a business plan for a livestock facility	ABS.01.03.01.a. ABS.01.03.03.a WHST. 11-12.d
Indicate an understanding of livestock facilities	● Research and select an appropriate barn designs ● Design a farm for a livestock species	WHST. 11-12.d RST 11-12.4
Calculate farm costs	● Determine the total costs to manage a farm which includes employment, taxes, mortgage and equipment/materials ● Research the types of taxes that a business pays into the state	ABS.02.02.03.a WHST. 11-12.d RST 11-12.4 MP6

Vocabulary:
Amortization
Assets
Budget
Capital inventory
Cash Flow Statement
Depreciation
Dystocia
Interest
Liabilities
Principle
Term

Assessments:
Lab activities
Class assignments, projects
Quizzes/Tests

Connections to College/Career Readiness:
FAMACHA Certification

Resources/Materials:
Modern Livestock and Poultry Production, Gillespie, J. R
Dairy Science, Ensminger, M.E
Equine Science, Ensminger, M.E
Farm and Ranch Business Management, Deere & Company
Livestock animals
Animal feed and supplies

Course Title	Animal Behavior & Training
Agriculture Pathway	Animal Systems
Length of Course	One Semester
Ledyard High School Vision of the Graduate	Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas. Demonstrate an ability to communicate information clearly and effectively through a variety of media, including written, oral, visual, musical, and/or video productions Demonstrate an ability to work effectively with others, sharing ideas, acknowledging one another's strengths, and collaborating to produce presentations, projects, performances, or events.
Course Overview	This course will give students the opportunity to apply the knowledge of cattle, horse, goat, swine, poultry, cat, dog, rabbit and other companion animal behavior to their management, training and welfare. Basic principles of genetics and physiology of behavior, perception, training, learning, motivation, and stress with consideration of integrated behavioral management will be covered. Students will maintain a training log and will present their findings. Three college credits can be offered if students take it as a UCONN ECE course.
Units of Study	1. Animal Behavior in Domestic Animals 2. Animal Training 3. Interpreting a Scientific Paper

Unit 1	Animal Behavior in Domestic Animals
Essential Questions	1. What is the cause of animal behavior? 2. Where did animal behavior originate from?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.01.a. Explain the implications of animal welfare and animal rights for animal systems. AS.02.01.02.a. Research and summarize the challenges involved in working with animals and resources available to overcome them (e.g., tools, technology, equipment, facilities, animal behavior signals, etc.). AS.02.01.04.b. Interpret domestic livestock and companion animal behaviors and outline safety procedures for working with those species.
Next Generation Science Standards	HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
Common Core State Standards	WHST. 11-12.d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as the expertise of likely readers. RST 11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.01.01.01.c. Evaluate the implications of animal adaptations on production practices and the environment. CRP.04.01.02.a. Examine and assess personal ability to speak with clarity, logic, purpose and professionalism in formal and informal settings (e.g., speeches, interviews, presentations, oral reports, etc.).

Next Generation Science Standards	HS-LS4-2. Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
Common Core State Standards	WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience SL.11-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience and task.

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Identify the ways in which an animal behaves	● Create a multimedia presentation that includes the animals' purpose, evolution of behavior, their nervous system, biological clock, migration, orientation, navigation, hormones, cognition, emotion, consciousness, mating systems, parental care, neonatal behavior, habitat selection, conflict and thwarting, aggression and fear. ● Apply the principles of ethology to understand animal welfare problems	AS.02.01.01.a CRP.04.01.02.a HS-LS2-8 HS-LS3-1 HS-LS4-2 WHST. 11-12.d RST 11-12.4 SL.11-12.4
Observe and interpret the school animal's behavior	● Assess companion animal and livestock animal behavior by observing their behavior through feeding, drinking, eliminative, sleeping, grooming, training and exploratory behavior. ● Document exhibited animal behavior into the animals report ● Create a domestication map for a companion or livestock animal	AS.02.01.02.a AS.02.01.04.b CRP.04.01.02.a WHST. 11-12.d SL.11-12.4
Explain the normal and abnormal behavior in domestic animals	● Differentiate between and identify what is considered normal and abnormal behavior in trained animal ● Research and report on a companion or livestock animal behavior ● Using a Venn diagram, compare and contrast two animal species behavior	AS.02.01.01.a AS.02.01.04.b AS.01.01.01.c. HS-LS4-5 HS-LS4-4. RST 11-12.4 WHST.11-12.4 SL.11-12.4

Unit 2	Animal Training
Essential Questions	1. How do you effectively train animals new behaviors/commands? 2. Why is it important to practice safe handling and calmness while training?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.04.c. Handle and work with domestic livestock, horses, and companion animals safely. 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. CRP.04.02.02.b. Apply techniques for ensuring clarity, logic and coherence to edit written and visual communications (e.g., emails, reports, presentations, technical documents, diagrams, etc.).
Next Generation Science Standards	HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring
Common Core State Standards	SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	CRP.09.02.01.a. Identify and summarize personal management skills necessary to function effectively in the workplace (e.g., time management, planning, prioritizing, etc.). CS.03.04.01.a. Identify and differentiate the appropriate protective equipment for the safe use and operation of specific tools and equipment (e.g. PPE, etc.).
Next Generation Science Standards	HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.
Common Core State Standards	RST 11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

Objectives	Activities	CT AFNR, NGSS, CCSS
Train a companion or livestock animal	- Apply psychological principles to animal management and training - Predict how studied animal will behave at the conclusion of the training session - Observe and interpret trained animal's behavior - Select appropriate training tools and equipment for trained animal - Identify domestic livestock and companion animal behaviors and list safety procedures for working with those species. - Train three new behaviors/commands both verbally and non-verbally to animal - Research training techniques and strategies for trained animal - Apply problem solving strategies to training challenges	AS.02.01.04.c AS.02.01.02.c CRP.09.02.01.a CS.03.04.01.a. HS-LS3-1 HS-LS2-8. SL.11-12.5 RST 11-12.4
Present trained animal	- Create a multimedia presentation to showcase three trained behaviors that show verbal and non-verbal commands - Use animal behavior terms appropriately when discussing trained animal	CRP.04.02.02.b SL.11-12.5 WHST.11-12.4
Complete a training log	- Document training experience utilizing a training log - Outline and plan a daily training schedule - Collect and categorize training data - Interpret results and evaluate their applicability to domestic animal management	CRP.04.02.02.b CRP.09.02.01.a WHST.11-12.4 RST 11-12.4
Demonstrate proper health care, and cleaning of animals and their environment	Feed, water, provide health care, and maintain clean/sanitary living conditions for school animals	AS.02.01.04.c AS.02.01.02.c CS.03.04.01.a. SL.11-12.5

Unit 3	Interpreting a Scientific Paper
Essential Questions	1. What is the importance of evaluating a scientific paper? 2. How do you know that a research paper is considered reliable?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	CRP.07.01.01.a. Identify and summarize reliable research processes and methods used to generate data for decision-making. CS.01.01.01.c. Evaluate and explain AFNR issues and their impacts to audiences with limited AFNR knowledge.
Next Generation Science Standards	HS-LS4-1. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
Common Core State Standards	WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST 11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.01.01.02.b. Describe the historical and scientific developments of different animal industries and summarize the products, services and careers associated with each.
Next Generation Science Standards	HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
Common Core State Standards	SL.11-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience and task.

Objectives	Activities	CT AFNR, NGSS, CCSS
Research and explore ethology studies focused around animal behavior	- Navigate/analyze/search publications to find relevant published scientific articles - Read an animal behavior study and write a critical assessment of the scientific paper - Relate the meaning and relevance of the research to animal behavior and training - Discuss scientific papers and critique as a class or a small group	CRP.07.01.01.a CS.01.01.01.c AS.01.01.02.b HS-LS4-1 HS-LS4-5 WHST.11-12.4 RST 11-12.4 SL.11-12.4

Vocabulary:

Allelomimetic	Ethology
Circadian rhythm	External Stimuli
Consummatory	Operant Behavior
Epimeletic	Umwelt

Assessments:
Animal Training Project
Evaluations
Laboratory/Discussion Write-Ups

Connections to College/Career Readiness:
University of Connecticut Early College Experience College Credit (3)

Resources/Materials:
Don't Shoot the Dog-The New Art of Teaching and Training. Revised Edition. Karen Pryor
Animal Behavior. Michael Breed & Janice Moore
Companion and livestock animals
Training treats
Variety of training tools/equipment

Course Title	Livestock Production
Agriculture Pathway	Animal Systems
Length of Course	One Semester
Ledyard High School Vision of the Graduate	Demonstrate an ability to solve problems of varying complexity across a variety of content areas. Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas. Demonstrate an ability to work effectively with others, sharing ideas, acknowledging one another's strengths, and collaborating to produce presentations, projects, performances, or events.
Course Overview	Students will establish and manage agricultural animal production projects which include selecting, breeding, feeding, caring for and marketing a variety of livestock species. Students will apply previous knowledge about livestock care and management to develop an appropriate facility for our school animals while considering animal welfare and enrichment for the animals. Students will learn how to manage herd health for our school animals while also learning how it applies to a large commercial farm. Students will learn how to select and judge livestock and decide which animals should be used for breeding and meat consumption while also learning how to market livestock products.
Units of Study	1. Facilities & Equipment 2. Herd Health 3. Selecting & Judging 4. Marketing

Unit 1	Facilities & Equipment
Essential Questions	1. What considerations should be taken when choosing appropriate facilities and equipment for livestock species? 2. What issues have been raised concerning the humane conditions of livestock facilities and equipment?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.05.c. Evaluate bio-security measures at a domestic livestock, poultry and/or companion animal facility AS.02.02.01.b. Utilize tools, technology and equipment to perform animal husbandry and welfare tasks. AS.02.01.02.a. Research and summarize the challenges involved in working with animals and resources available to overcome them (e.g., tools, technology, equipment, facilities, animal behavior signals, etc.)
Next Generation Science Standards	HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	CS.03.04.01.b. Analyze and demonstrate adherence to protective equipment requirements when using various AFNR tools and equipment.
Next Generation Science Standards	HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task MP.4 Model with mathematics

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Describe the facilities and equipment required for a variety of production livestock species	● [Identify and categorize tools and equipment](#) used in livestock facilities ● Analyze animal facilities to determine if standards have been met ● Distinguish between the types of laws and regulations pertaining to animal systems	AS.02.02.01.b AS.02.01.02.a WHST 11-12.4 CS.03.04.01.b RST.11-12.4 SL. 11-12.4
Research and design animal housing, equipment and handling facilities for the major systems of animal production	● Differentiate between the types of facilities needed to house and produce livestock species safely and efficiently ● Identify and summarize equipment, technology and handling facility procedures used in modern animal production ● Research and discuss the concerns with raising animals in confinement ● Create an appropriate facility for the school livestock	AS.02.02.01.b AS.02.01.02.a WHST 11-12.4 CS.03.04.01.b RST.11-12.4 HS-LS4-4 HS-LS4-5 SL. 11-12.4 MP.4
Design and Implement a biosecurity plan	● Explain the importance of biosecurity in livestock facilities ● Research and interpret livestock biosecurity plans ● Create a biosecurity plan for the school farm	AS.02.01.05.c WHST 11-12.4 RST.11-12.4 SL. 11-12.4 MP.4

Unit 2	Herd Health
Essential Questions	1. What practices should be included in a good herd health plan? 2. How effective are common preventive measures against diseases?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.04.c. Handle and work with domestic livestock, horses, and companion animals safely. AS.04.02.04.c. Create a plan to differentiate care of a species of breeding animals throughout their growth stages AS.07.01.02.b. Perform simple health-check evaluations on animals and practice basic emergency response procedures related to animals
Next Generation Science Standards	HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.03.01.01.c. Assess nutritional needs for an individual animal based on its growth stage and production system. AS.02.02.03.b. Analyze and summarize the impact of animal trace-back capabilities on producers and consumers.
Next Generation Science Standards	HS-LS3-2. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task MP.4 Model with mathematics

Objectives	Activities	CT AFNR, NGSS, CCSS
Describe the production management practices of a variety of livestock species	- Research the function of production livestock and determine the production systems required - Describe and/or demonstrate common management practices such as castration, dehorning, vaccination and identification of animals. - Examine the advantages and disadvantages of using various breeding systems - Explain total herd health and its use in the herd related to prevention and treatment of parasites, diseases and nutritional disorders	AS.04.02.04.c HS-LS2-8 HS-LS3-2 WHST 11-12.4 RST.11-12.4 SL. 11-12.4
Differentiate between and provide the nutritional needs of livestock in different growth stages and production stages	- Identify and summarize essential nutrients required for animal health and analyze each nutrient's role in growth and performance - Feed school livestock according to nutritional needs and growth stage - Evaluate and summarize the potential impacts with a feed label and feeding directions	AS.02.01.04.c AS.04.02.04.c AS.03.01.01.c HS-LS2-8 WHST 11-12.4 RST.11-12.4 SL. 11-12.4 MP.4
Perform physical examinations and maintain herd health on the school livestock	- Select preventive measures for controlling and limiting the spread of common diseases and common parasites to livestock - Diagnose and treat common diseases, parasites and physiological disorders of animals according to directions - Identify and describe animal tracking systems used in livestock production - Safely handle and restrain school livestock	AS.02.01.04.c AS.07.01.02.b AS.02.02.03.b WHST 11-12.4 RST.11-12.4 SL. 11-12.4 MP.4

Unit 3	Selecting & Judging
Essential Questions	1. What is the purpose of selecting and judging livestock? 2. How do the industry goals affect how we select and judge livestock?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.01.02.01.c. Evaluate the effectiveness of different production methods and defend the use of selected methods using data and evidence. AS.04.02.01.c. Select and evaluate a breeding system based on the principles of genetics.
Next Generation Science Standards	HS-LS3-3. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	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 AS.04.02.03.a. Identify and summarize genetic defects that affect animal performance
Next Generation Science Standards	HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task MP. 4 Model with mathematics

Objectives	Activities	CT AFNR, NGSS, CCSS
Apply knowledge of anatomical and physiological characteristics of animals to make production and management decisions	• Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction • Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts	AS.01.02.01.c AS.04.02.03.a HS-LS3-1 WHST 11-12.4 RST.11-12.4 SL. 11-12.4
Evaluate animals for breeding readiness and soundness	• Evaluate and select animals for reproductive readiness • Select breeding animals by interpreting performance data provided • Identify the parts of the livestock animal and use in phenotypic evaluation	AS.04.02.01.c AS.04.03.04.a HS-LS3-3 WHST 11-12.4 RST.11-12.4 SL. 11-12.4 MP.4
Select and evaluate a breeding system based on the principles of genetics	• Select and evaluate breeding animals and determine the probability of a given trait in their offspring • Identify and summarize genetic defects that affect animal performance • Select and assess animal performance based on quantitative breeding values for specific characteristics.	AS.04.02.01.c AS.04.03.04.a HS-LS3-3 WHST 11-12.4 RST.11-12.4 SL. 11-12.4 MP.4

Unit 4	Marketing
Essential Questions	1. What components make up the total cost of a livestock operation? 2. Why is marketing and advertising important to livestock production?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.01.02.01.b. Analyze the impact of animal production methods on end product qualities (e.g., price, sustainability, marketing, labeling, animal welfare, etc.) AS.01.02.02.a. Research and examine marketing methods for animal products and services (e.g., conventional, niche markets, locally grown, etc.).
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.06.01.02.c. Recommend different uses for an animal species based upon an analysis of local market needs ABS.01.03.01.c. Devise strategies to improve the operation of AFNR businesses using management skills ABS.01.03.02.a. Identify and interpret appropriate local, state, federal, international and industry regulations that impact the management and operation of AFNR businesses
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task MP.4 Model with mathematics

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Discuss common industry and association standards that impact agricultural marketing	- List and explain producer quality assurance programs for various agricultural products, including the Beef Quality Assurance, Milk and Dairy Beef Quality Assurance Program, Poultry Quality Assurance Program, and Pork Quality Assurance Program - Investigate the guidelines for producers to follow with quality assurance programs for specific products such as milk or pork	AS.01.02.01.b ABS.01.03.02.a WHST 11-12.4 RST.11-12.4 SL. 11-12.4
Describe the meaning and importance of agricultural marketing	- List and explain fundamental terms, including market, marketing, agrimarketing, agribusiness marketing, and E-commerce - Identify the meaning and importance of consumers and consumer choices in agricultural marketing	AS.01.02.01.b AS.06.01.02.c WHST 11-12.4 RST.11-12.4 SL. 11-12.4
Interpret marketing plans for an animal agriculture product or service	- Research and examine marketing methods for animal products and services - Calculate costs of marketing versus predicted increases in sales	AS.01.02.02.a AS.06.01.02.c WHST 11-12.4 RST.11-12.4 SL. 11-12.4 MP.4
Describe the importance and use of advertising in agribusiness	- Explain the meaning and kinds of advertising used to promote supplies and services in agribusiness - Sketch the design of a display promoting a local agricultural product	AS.01.02.02.a AS.06.01.02.c ABS.01.03.01.c WHST 11-12.4 RST.11-12.4 SL. 11-12.4

Course Vocabulary:
Agricultural Commodity
Agricultural Service
Expected Progeny Differences (EPD's)
Market Price
Marketing Strategy
Niche Market
Risk Management
Target Market

Assessments:
Lab activities
Class assignments
Quizzes/Tests

Connections to College/Career Readiness:
FAMACHA Certification through the University of Rhode Island

Resources/Materials:
Livestock species kept at LHS
Variety of livestock equipment and tools
Modern Livestock and Poultry Production textbook, Gillespie, J.R.
Local farms for field trips

Course Title	Farm to Table
Agriculture Pathway	Animal Systems
Length of Course	One Semester
Ledyard High School Vision of the Graduate	Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas. Demonstrate an ability to solve problems of varying complexity across a variety of content areas. Demonstrate an ability to work effectively with others, sharing ideas, acknowledging one another's strengths, and collaborating to produce presentations, projects, performances, or events.
Course Overview	Students will explore relationships among food, health, society and the environment by raising livestock from birth to harvest. Students will learn how animals are raised for food and how it impacts human health and identify ways to close the hunger gap through defining and measuring hunger and food insecurity. Students will explore how food becomes contaminated, the consequences for public health, and how to prevent and respond to food safety issues. Students will apply methods of food processing and preservation by freezing, drying, fermenting, and pickling.
Units of Study	1. Birth to Harvest 2. The Hunger Gap 3. Sustainability in Animal Production 4. Food Safety 5. Agricultural Processing & Preservation

Unit 1	Birth to Harvest
Essential Questions	1. What are the impacts of food animal production on human health and the environment? 2. What can be done to raise animals in ways that are more sustainable and humane?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.04.c. Handle and work with domestic livestock, horses, and companion animal safely AS.03.02.02.c. Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production AS.08.01.01.a. Identify and summarize the effects of animal agriculture on the environment
Next Generation Science Standards	HS-ESS3-3. Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.02.01.b. Utilize tools, technology and equipment to perform animal husbandry and welfare tasks CRP.01.01.02.c. Model personal responsibility in workplace and community situations
Next Generation Science Standards	HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Explain the impact that food animal production has on human health and the environment.	- Research how food animal production affects human health - Create a graph of the effects that livestock have on the environment - Propose interventions to reduce the food system's contribution to the environment	AS.08.01.01.a. HS-ESS3-3. WHST 11-12.4 RST.11-12.4 SL. 11-12.4 HS-LS2-7
Demonstrate proper feeding, watering, health care, cleaning and handling of livestock.	- Exhibit proper handling of livestock - Utilize livestock equipment safely and effectively - Demonstrate proper hygiene and sanitation - Feed animals according to their nutritional requirements	AS.02.01.04.c. AS.02.02.01.b. AS.03.02.02.c CRP.01.01.02.c SL. 11-12.4
Raise food animals humanely for processing and preservation.	- Research humane handling of livestock - Participate in a class discussion on Temple Grandin - Outline steps for effectively raising livestock humanely from birth to harvest - Devise and execute a plan to raise food animals for processing and preservation	AS.02.01.04.c. AS.02.02.01.b. AS.03.02.02.c HS-ESS3-3 CRP.01.01.02.c HS-LS2-7

Unit 2	The Hunger Gap
Essential Questions	1. How do hunger and food insecurity affect people? 2. How can we reduce hunger and food insecurity in our community?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	CS.01.01.01.b. Analyze and summarize AFNR issues and their impact on local, state, national and global levels. CS.02.02.02.b. Assess how people within societies on local, state, national and global levels interact with AFNR systems on a daily, monthly or yearly basis. CRP.08.03.02.b. Create plans to solve workplace and community problems.
Next Generation Science Standards	HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	CS.02.02.03.b. Assess the economic impact of an AFNR system on a local, state, national and global level. CRP.05.02.01.a. Examine areas in the workplace and community where decisions will make a positive impact.
Next Generation Science Standards	HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task

Objectives	Activities	CT AFNR, NGSS, CCSS
Define hunger and food insecurity and explain how they are different	• Compare and contrast hunger and food insecurity • Research hunger and food insecurity data in our community	CS.01.01.01.b WHST 11-12.4 RST.11-12.4 CS.02.02.03.b HS-ETS1-1 SL. 11-12.4
Analyze and interpret community food availability maps	• Locate and research the food availability maps in our community • Interpret and present findings for our region	CS.02.02.02.b WHST 11-12.4 RST.11-12.4 HS-ETS1-1 SL. 11-12.4
Analyze interventions for reducing hunger and food insecurity	• Research the history of interventions to address hunger • Propose possible interventions for reducing hunger and food security in our region • Compare the effectiveness of different types of interventions such as soup kitchens to federal food and nutrition assistance programs • Research and interpret the Measuring Household Food Security USDA survey	CS.01.01.01.b CS.02.02.02.b CRP.08.03.02.b HS-ETS1-3 WHST 11-12.4 RST.11-12.4 CRP.05.02.01.a SL. 11-12.4
Describe the criteria for defining a food desert	• Research and interpret food deserts • Create a plan to provide fresh animal products to our community	CS.02.02.02.b WHST 11-12.4 RST.11-12.4 CS.02.02.03.b SL. 11-12.4

Unit 3	Sustainability in Animal Production
Essential Questions	1. How does sustainability apply to agriculture? 2. What kind of agriculture should we strive toward, and how will we get there?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.08.02.01.a. Research and summarize environmental conditions that impact animals CS.04.01.02.a. Read and interpret the definition of sustainability and summarize how it relates to AFNR activities
Next Generation Science Standards	HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	FPP.04.02.02.a. Identify and explain environmental and safety concerns about the food supply AS.08.02.02.b. Implement and evaluate the effectiveness of methods to ensure optimal environmental conditions for animals.
Next Generation Science Standards	HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task

Objectives	Activities	CT AFNR, NGSS, CCSS
Analyze how climate change affects agriculture	- Explain the science of climate change - Propose interventions to reduce the food system's contributions to climate change	AS.08.02.01.a CS.04.01.02.a WHST 11-12.4 RST.11-12.4 FPP.04.02.02.a SL. 11-12.4
Describe the core principles of sustainable agriculture	- Define sustainability - Research sustainable methods used in livestock production. - Discuss the advantages of sustainable livestock production - Compare the methods used in our school farm to a modern sustainable livestock farm.	AS.08.02.01.a CS.04.01.02.a WHST 11-12.4 RST.11-12.4 FPP.04.02.02.a SL. 11-12.4
Describe some qualities of natural ecosystems that agroecology seeks to mimic	- Interpret agroecology case studies and discuss how it illustrates agroecological qualities - Contrast agroecological approaches with industrial agriculture	HS-ESS3-1 WHST 11-12.4 RST.11-12.4 FPP.04.02.02.a AS.08.02.02.b
Develop ideas to implement sustainable methods into our school farm	- Brainstorm ideas that may reduce the resources and energy used in our school farm. - Compile a list of potential sustainable methods that could be integrated into our school farm.	WHST 11-12.4 FPP.04.02.02.a AS.08.02.02.b HS-ESS3-4 SL. 11-12.4

Unit 4	Food Safety
Essential Questions	1. Where, when, and how is our food system vulnerable to contamination? 2. How can we determine the origin of a foodborne illness outbreak?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	FPP.01.02.01.c. Identify sources of contamination in food products and/or processing facilities and develop ways to eliminate contamination FPP.01.02.02.a. Research and summarize procedures of safe handling protocols (e.g., Hazard Analysis and Critical Control Points Plan (HACCP); Critical Control Point procedures (CCP); Good Agricultural Practices Plan (GAP), etc.) FPP.01.02.04.a. Describe the effects food-borne pathogens have on food products and humans.
Next Generation Science Standards	HS-PS1-5. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	FPP.04.03.01.a. Examine and summarize the purposes of organizations that influence or regulate the food products and processing industry. CS.05.01.02.a. Examine the educational, training and experiential requirements to pursue a career in an AFNR pathway
Next Generation Science Standards	HS-PS1-3. Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task

Objectives	Activities	CT AFNR, NGSS, CCSS
Identify sources of food contamination throughout the food system	- Research, define and interpret the sources of food contamination - Explore how public health officials respond to foodborne illness outbreaks	FPP.01.02.01.c FPP.01.02.04.a WHST 11-12.4 RST.11-12.4 FPP.04.03.01.a SL. 11-12.4
Identify food spoilage and the differences in food poisoning	- Define and identify food spoilage - Contrast food borne infection and intoxication - Categorize food borne pathogens as causing food infection or food intoxication	FPP.01.02.01.c FPP.01.02.02.a FPP.01.02.04.a WHST 11-12.4 RST.11-12.4 SL. 11-12.4
Demonstrate food safety and sanitation procedures	- Use the Hazard Analysis Critical Control Point (HACCP) during all food handling processes to minimize the risk of food borne illness - Practice food service management safety/sanitation program procedures consistently when serving themselves and others - Demonstrate proper storage and handling of large quantities of both raw and prepared foods - Demonstrate safe food handling and preparation techniques that prevent cross contamination from potentially hazardous foods - Recognize appropriate cleaning and sanitizing materials for proper uses and safety hazards	FPP.01.02.02.a FPP.01.02.02.a HS-PS1-5 RST.11-12.4 CS.05.01.02.a HS-PS1-3 SL. 11-12.4

Unit 5	Agricultural Processing & Preservation
Essential Questions	1. Why and how are foods processed? 2. What should consumers know about their food?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	FPP.01.03.01.b. Analyze characteristics of food products and determine appropriate storage procedures FPP.02.01.01.b. Compare and contrast the relative value of food constituents relative to food product qualities FPP.02.02.01.b. Explain how the chemical and physical properties of foods influence nutritional value and eating quality FPP.03.01.04.a. Identify and describe foods derived from different classifications of food products FPP.03.02.03.b. Analyze and document food preservation processes and methods on a variety of food products
Next Generation Science Standards	HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	FPP.04.01.01.a. Research and summarize examples of policy and legislation that affect food products and processing systems in the United States and around the world FPP.04.01.02.a. Examine the impact of consumer trends on food products and processing practices FPP.04.01.03.a. Compare and contrast cultural differences regarding food products and processing practices
Next Generation Science Standards	HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task

Objectives	Activities	CT AFNR, NGSS, CCSS
Identify who regulates and verifies the accuracy of food labels	● Explore the common types of food labels and how to interpret them. ● Research food labeling regulations from the Food & Drug Administration	WHST 11-12.4 RST.11-12.4 FPP.04.01.01.a SL. 11-12.4
Examine common food marketing strategies.	● Research and describe how food marketing influences food choices. ● Create a marketing strategy for foods processed or preserved at school	WHST 11-12.4 RST.11-12.4 FPP.04.01.01.a FPP.04.01.02.a
Analyze how food environments influence food choices	● Define 'food environments' ● Identify how changing food environments could promote healthier diets.	WHST 11-12.4 RST.11-12.4 FPP.04.01.02.a
Explain why food waste is a problem	● Describe what happens to food waste ● Identify strategies to reduce food waste	WHST 11-12.4 RST.11-12.4 FPP.04.01.03.a SL. 11-12.4
Identify the roles of workers at every step in the food supply chain	● Analyze the roles, wages and working conditions of food chain workers ● Create a hypothetical policy that will impact the food supply chain workers	WHST 11-12.4 RST.11-12.4 FPP.04.01.03.a SL. 11-12.4
Apply methods of food preservation	● Identify the rationale for different food processing techniques ● Distinguish between preservation of foods, refrigeration, canning, drying, fermentation and food additives ● Apply appropriate food storage procedures ● Make butter, yogurt and ice cream ● Make mozzarella ● Dehydrate fruit ● Make (dried meat) jerky ● Make pickles ● Prepare and cook agricultural meals	FPP.01.03.01.b FPP.02.01.01.b FPP.02.02.01.b FPP.03.01.04.a FPP.03.02.03.b HS-LS1-1 WHST 11-12.4 RST.11-12.4 SL. 11-12.4

Course Vocabulary:
Agroecology
C. botulinum
Casein
Clostridium perfringens
Colloid
Escherichia coli
Food infection
Food Intoxication
Homogenization
Myoglobin
Pasteurization
Staphylococcus aureus
Sterilization
Value-added

Assessments:
Lab activities
Class assignments, Mayonnaise, FATMAN chart
Quizzes/Tests

Connections to College/Career Readiness:
ServSafe Food Handler Certification

Resources/Materials:
ServSafe Food Handler Curriculum
Livestock species kept at LHS
Kitchen and kitchen accessories
Modern Livestock and Poultry Production, Gillespie, J.R.
Principles of Food Science, Ward, J.D.
Introduction to Food Science, Parker, R.
https://are.uconn.edu/the-zwick-center-for-food-and-resource-policy/
https://foodsecurityindex.eiu.com/Country
https://www.ctfoodbank.org/about-us/hunger-in-connecticut/map-the-meal-gap/

Course Title	Animal Diseases
Agriculture Pathway	Animal Systems
Length of Course	One Semester
Ledyard High School Vision of the Graduate	Demonstrate an ability to work effectively with others, sharing ideas, acknowledging one another's strengths, and collaborating to produce presentations, projects, performances, or events. Demonstrate an ability to solve problems of varying complexity across a variety of content areas. Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas.
Course Overview	Students will apply previous knowledge of animal science to study the signs, causes, diagnosis, prevention and treatment of various animal diseases. Students will conduct individual and group investigation into specific diseases and engage in hands-on disease exploration activities. Students will learn about the immune system and its role in fighting disease in the body. Students will define biosecurity and develop health plans for animals housed on campus. Students will demonstrate the ability to run diagnostic tests such as McMaster fecal tests to assess for internal parasites and collect data regarding Fecal Egg Count Reduction Tests (FECRT) to determine the efficacy of anthelmintics. Students will apply knowledge to conduct case study investigations. Students will learn to effectively read and comprehend accepted industry disease resources, such as the Merck Veterinary Manual and published scientific journal articles and use these resources to conduct individual disease investigation.
Units of Study	1. Principles of Disease 2. Pathogens 3. Immune System 4. Methods of Disease Prevention and Treatment 5. Case Studies

Unit 1	Principles of Disease
Essential Questions	1. Why is it important to study animal diseases? 2. How does disease occur?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.05.01.03.a. Recognize illnesses and disorders based on symptoms and problems caused by disease, parasites, and disorders among companion, lab and/or domestic animals. AS.07.01.03.a. List and summarize the characteristics of wounds, common diseases, parasites and physiological disorders that affect animals.
Common Core State Standards	SL 11-12.1. Initiate and participate effectively in a range of collaborative discussions (one on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.07.01.01.b. Describe and demonstrate the proper use and function of specific tools and technology related to animal health management. AS.07.01.02.b. Perform simple health-check evaluations on animals and practice basic emergency response procedures related to animals.
Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text. RST.11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research. MP.4. Model with mathematics.

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Compare and contrast signs of healthy and unhealthy animals.	• Apply normal physiological values to determine the health of an animal. • Observe animal behavior and conduct physical examinations on school animals to determine health	AS.05.01.03.a. AS.07.01.03.a. SL 11-12.1. AS.07.01.01.b. AS.07.01.02.b. MP.4.
Read and interpret animal disease literature.	• Define words that are used to describe diseases. • Read and analyze disease articles from the Merck Veterinary Manual and other scientific journal publications.	AS.05.01.03.a. SL 11-12.1. RST.11-12.4 RST.11-12.7. WHST.9-12.9
Differentiate between infectious and noninfectious diseases.	• Identify and explain the factors that cause disease. • Discuss Koch's postulates.	AS.07.01.03.a. RST.11-12.7.
Demonstrate proper cleaning and sanitation as to prevent the spread of diseases.	• Dilute animal appropriate disinfectants to correct concentration • Demonstrate proper cleaning of animal cages and pens • Maintain biosecurity practices	AS.07.01.01.b. AS.07.01.02.b. MP.4. Model with mathematics.

Unit 2	Pathogens
Essential Questions	1. How do the different types of pathogens differ in their ability to cause disease? 2. Which type of pathogen is of the biggest concern to animal health?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.07.01.04.a. Identify and summarize characteristics of causal agents and vectors of diseases and disorders in animals.
Common Core State Standards	WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	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.
Common Core State Standards	RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. SL 11-12.1. Initiate and participate effectively in a range of collaborative discussions (one on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Objectives	Activities	CT AFNR, NGSS, CCSS
Explore and differentiate characteristics of the five main types of pathogens.	- Conduct research to investigate the biology, pathology, typical clinical signs, prevention and treatment of specific types of pathogens - Find, read and interpret scientific literature	AS.07.01.04.a. AS.07.01.03.b. RST.11-12.9 WHST.9-12.7 SL. 11-12.4
Apply knowledge to determine which type of pathogen is the biggest threat to animal health.	[Create a presentation] to teach classmates about a particular pathogen - Participate in class discussions on the impact of pathogens on animal health - Cultivate bacteria growth	AS.07.01.04.a. AS.07.01.03.b. SL. 11-12.4 SL 11-12.1.

Unit 3	Immune System
Essential Questions	1. How does the body defend itself from diseases? 2. How do the innate and adaptive immune systems differ in their ability to protect the body from disease?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.06.02.01.b. Analyze the functions of each animal cell structure. AS.06.02.03.b. Compare and contrast animal cells, tissues, organs, body system types and functions among animal species.
Common Core State Standards	RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Supporting Standards	
Connecticut Agriculture, Food, and Natural Resources Standards	AS.06.02.01.c. Correlate the functions of animal cell structures to animal growth, development, health and reproduction.
Common Core State Standards	SL 11-12.1. Initiate and participate effectively in a range of collaborative discussions (one on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Objectives	Activities	CT AFNR, NGSS, CCSS
Differentiate between the innate and adaptive immune systems.	- Participate in class discussion defining the immune system's purpose - Identify the organs of the immune system and their functions - Explore the innate and adaptive immune system functions	AS.06.02.03.b. RST.11-12.9 SL 11-12.1.
Describe the function of important immune cells.	- Research the function of important immune cells - Explain how the immune cells interact with each other and pathogens upon entry into the body - Describe the mechanism by which specific cells provide protection	AS.06.02.01.b. AS.06.02.03.b. AS.06.02.01.c. RST.11-12.9 WHST.9-12.7 SL 11-12.1.

Unit 4	Methods of Disease Prevention and Treatment
Essential Questions	1. What methods of disease prevention and treatment offer the best defense against pathogens and other causes of disease? 2. What are the most appropriate methods of disease prevention and treatment that we should be using with our program animals?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.05.c. Evaluate bio-security measures at a domestic livestock, poultry and/or companion animal facility. AS.05.01.03.b. Select preventative measures for controlling and limiting the spread of common diseases, and common parasites among companion and domestic animals. AS.05.01.03.c. Evaluate preventative measures for controlling and limiting the spread of common diseases, and common parasites among companion and domestic animals, including vaccination, sanitation, observation, isolation, waste disposal, proper handling, protective clothing, and hand washing. 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.c. Design and implement a health maintenance and a disease and disorder prevention plan for animals in their natural and/or confined environments. AS.07.02.01.a. Summarize the importance of biosecurity to the animal industry at multiple levels (e.g. local, state, national, global). AS.07.02.01.c. Design and evaluate a biosecurity plan for an animal production operation.
Common Core State Standards	SL 11-12.1. Initiate and participate effectively in a range of collaborative discussions (one on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.02.01.b. Utilize tools, technology and equipment to perform animal husbandry and welfare tasks. AS.05.02.01.b. Analyze animal facilities to determine if standards have been met. AS.07.01.05.a. Explain the clinical significance of common veterinary methods and treatment (e.g., aseptic techniques, antibiotic use, wound management, etc.). AS.08.02.01.a. Identify and summarize methods for ensuring optimal environmental conditions for animals.

Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text. MP.4. Model with mathematics.

Objectives	Activities	CT AFNR, NGSS, CCSS
Apply biosecurity principles to develop an animal health management plan.	- Read and comprehend Biosecurity literature in the Merck Veterinary Manual - Create an animal health plan that will properly prevent the introduction and spread of diseases in animals	AS.02.01.05.c. AS.05.01.03.b. AS.07.01.04.c. AS.07.02.01.a. AS.07.02.01.c. AS.05.02.01.b. AS.08.02.01.a. SL 11-12.1. RST.11-12.4
Discuss and evaluate methods of disease prevention and treatment.	- Participate in class discussion to compare and contrast methods of disease prevention - Identify differences between categories of pharmaceuticals used to treat diseases (antibiotics, anthelmintics, etc.) - Research the process of vaccination and pharmaceutical development - Conduct research into alternative therapies and determine when it is appropriate to use alternative therapies and similar care to address animal health concerns - Research and discuss current industry challenges and controversies with popular methods of disease prevention and treatment (antibiotic and anthelmintic resistance)	AS.05.01.03.b. AS.07.01.05.a. AS.08.02.01.a. SL 11-12.1. RST.11-12.9
Demonstrate the ability to apply disease preventative measures and administer treatments to school animals.	- Demonstrate the ability to FAMACHA score our livestock. - Run a McMaster and fecal egg count reduction test (FECRT). - Track data and graph results from before and after administering treatments - Administer vaccinations with veterinarian supervision - Administer appropriate medications to treat any AgSci program animal illnesses	AS.05.01.03.c. AS.07.01.03.c. AS.02.02.01.b. SL 11-12.1. RST.11-12.4 MP.4.

Unit 5	Case Studies
Essential Questions	1. What information is most important when determining the origin of disease? 2. How do you differentiate between which disease is causing illness in an animal?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.05.01.03.c. Evaluate preventative measures for controlling and limiting the spread of common diseases, and common parasites among companion and domestic animals, including vaccination, sanitation, observation, isolation, waste disposal, proper handling, protective clothing, and hand washing. 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.07.02.02.b. Analyze the health risk of different zoonotic diseases to humans and identify prevention methods.
Common Core State Standards	SL 11-12.2. Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.08.02.01.a. Identify and summarize methods for ensuring optimal environmental conditions for animals. AS.05.01.03.a. Recognize illnesses and disorders based on symptoms and problems caused by disease, parasites, and disorders among companion, lab and/or domestic animals. CRP.10.01.02.a. Examine career clusters and identify potential career opportunities based on personal interests, talents, goals and preferences.
Common Core State Standards	SL. 11-12.4 Present information findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.

Objectives	Activities	CT AFNR, NGSS, CCSS
Conduct investigation into diseases affecting a variety of animal species.	- Read and interpret scientific literature - Evaluate clinical signs and determine the origin of disease - Suggest appropriate treatment methods and revisions to animal management to prevent further spread of disease - Research animal epidemics, diseases of economic importance and foreign animal diseases - Observe necropsy (if available)	AS.05.01.03.a. AS.05.01.03.c. AS.07.01.03.b. AS.08.02.01.a. SL 11-12.2. SL. 11-12.4 WHST.9-12.7 WHST 11-12.4
Determine the impact of animal disease on human health.	- Assess the zoonotic potential of specific diseases - Investigate historically significant zoonotic diseases	AS.05.01.03.c. AS.07.02.02.b. SL 11-12.2 WHST.9-12.7
Explore career opportunities as they pertain to animal diseases.	- Investigate a variety of careers in the animal health and disease field - Conduct an interview and/or participate in a class discussion with professionals employed in animal health and disease careers	CRP.10.01.02.a.

Course Vocabulary:

Adaptive	Incubation Period
Anthelmintic	Innate
Biosecurity	Koche's Postulates
Clinical Signs	Latent Period
Disease of Economic Importance	Morbidity
Etiology	Mortality
FAMACHA Score	Pathogen
FECRT	Period of Communicability
Fomite	Prognosis
Foreign Animal Disease	Prophylaxis
Host	Vector

Assessments:
Lab activities
Class assignments
Quizzes/Tests
Projects

Connections to College/Career Readiness:
Students completing this course will have the opportunity to earn FAMACHA certification through the University of Rhode Island.

Resources/Materials:
Livestock and companion animals housed at LHS
Laboratory tools and supplies (microscopes, microscope slides and cover slips, etc.)
Animal management tools and equipment
The Merck Veterinary Manual
Field trips to places such as Plum Island or UConn's Pathobiology Program and/or CVMDL
Guest speakers such as disease research scientists, veterinary professionals, Pfizer (Evolution of a pharmaceutical presentation), etc.
Films: Contagion, Outbreak, Bird Flu Documentary
Pandemic board game

Course Title	Veterinary Science
Agriculture Pathway	Animal Systems
Length of Course	One Semester
Ledyard High School Vision of the Graduate	Demonstrate an ability to work effectively with others, sharing ideas, acknowledging one another's strengths, and collaborating to produce presentations, projects, performances, or events. Demonstrate an ability to solve problems of varying complexity across a variety of content areas. Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas.
Course Overview	Students will study the field of veterinary science focusing on the careers of veterinary assistants and veterinary technicians. Students will develop basic skills and competencies for an entry-level position in a veterinary hospital, boarding kennel, animal control agency, or humane society. The course will emphasize hands-on laboratory activities. Students will demonstrate safe animal handling techniques on a variety of animal species, perform physical examinations and demonstrate many veterinary clinical skills. Students will develop an understanding of veterinary practice operations.
Units of Study	1. Safety in the Veterinary Field 2. Health Care Principles 3. Clinical Skills 4. Veterinary Practice Management

Unit 1	Safety in the Veterinary Field
Essential Questions	1. What hazards exist in the veterinary field? 2. How do I safely work with and around animals?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.02.a. Research and summarize the challenges involved in working with animals and resources available to overcome them (e.g. tools, technology, equipment, facilities, animal behavior signals, etc.). AS.02.01.02.b. Analyze and document animal welfare procedures used to ensure safety and maintain low stress when moving and restraining animals. 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.02.01.04.c. Handle and work with domestic livestock, horses, and companion animals safely. BS.02.04.01.b. Assess the need for personal protective equipment in a variety of situations and select the appropriate equipment to wear when working with biological and chemical materials. BS.02.04.03.b. Perform waste disposal according to the standard operating procedures.
Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.01.b. Design programs that assure the welfare of animals and prevent abuse or mistreatment. AS.02.01.05.b. Explain the importance of biosecurity in relation to domestic livestock and companion animals. AS.05.02.01.c. Evaluate facility designs and make recommendations to ensure that it meets standards for the legal, safe, ethical, economical and efficient production of animals. AS.07.02.02.b. Analyze the health risk of different zoonotic diseases to humans and identify prevention methods.
Common Core State Standards	RST.11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Demonstrate necessary safety precautions and proper methods and use of equipment when handling and restraining livestock and companion animals.	- Safely handle and restrain livestock species for animal care and veterinary tasks - Safely handle and restrain a variety of companion animal species for animal care and veterinary tasks - Select the appropriate equipment and tools for the restraint of various animals CVA Skill Validation Checklist	AS.02.01.02.b. AS.02.01.02.c. AS.02.01.04.c. AS.02.01.01.b. AS.02.01.05.b.
Think critically about hazards in the veterinary office and respond appropriately to situations.	- Review OSHA guidelines regarding safe workplace environments, disposal of hazardous materials and personal protective equipment - Recognize hazard symbols - Demonstrate proper sanitation of veterinary tools and equipment - Demonstrate proper hand washing procedures - Read and interpret Safety Data Sheets and use chemicals according to directions - Respond appropriately to hazardous situation case studies Safety in the Veterinary Field: Hazards interactive notebook	BS.02.04.01.b. BS.02.04.03.b AS.05.02.01.c. AS.07.02.02.b. RST.11-12.4. RST.11-12.7.

Unit 2	Health Care Principles
Essential Questions	1. Why is preventative health care important to animal health? 2. What diseases are most important to vaccinate animals against?

Priority Standards Assessed in Learning

| **Connecticut Agriculture, Food, and Natural Resources Standards** | AS.05.01.03.a. Recognize illnesses and disorders based on symptoms and problems caused by disease, parasites and disorders among companion, lab and/or domestic 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.07.02.02.b. Analyze the health risk of different zoonotic diseases to humans and identify prevention methods. |

Common Core State Standards	RST.11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem

Supporting Standards	

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.04.c. Handle and work with domestic livestock, horses, and companion animals safely. AS.07.01.02.a. Explain methods of determining animal health and disorders. 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.
Common Core State Standards	WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. SL.11-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. RST.11-12.9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

Objectives	Activities	CT AFNR, NGSS, CCSS
Perform physical examinations and preventative health measures on the school animals.	- Observe and analyze animal behaviors - Apply knowledge of animal behavior and health to physical exam procedures - Demonstrate the ability to obtain animal vital signs - Analyze an animal medical situation and determine the needs of the patient	AS.02.01.04.c. AS.07.01.02.a. AS.07.01.03.b.
Investigate diseases most commonly affecting various species of animals.	- Identify vaccination protocols for companion and livestock animals - Select preventive measures for controlling and limiting the spread of common diseases and common parasites to livestock and companion animals - Treat common diseases, parasites and physiological disorders of animals according to directions	AS.05.01.03.a. AS.07.01.04.b. AS.07.02.02.b. RST.11-12.7. RST.11-12.9. WHST.9-12.7 SL.11-12.4

Unit 3	Clinical Skills
Essential Questions	1. How do I properly demonstrate essential veterinary diagnostic and treatment skills? 2. How do I determine which diagnostic measures and treatments are appropriate for specific health concerns?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.07.01.01.c. Select and use tools and technology to meet specific animal health management goals. AS.07.01.02.c. Determine when an animal health concern needs to be referred to an animal health professional. AS.07.01.05.a. Explain the clinical significance of common veterinary methods and treatment (e.g., aseptic techniques, antibiotic use, wound management, etc.). AS.07.01.05.c. Identify and describe surgical and nonsurgical veterinary treatments and procedures to meet specific animal health care objectives.
Common Core State Standards	RST.11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. SL 11-12.1. Initiate and participate effectively in a range of collaborative discussions (one on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.02.01.c. Select, evaluate and defend the use of specific tools, technology or equipment used to perform animal husbandry and welfare tasks. AS.07.01.01.a. Identify and summarize specific tools and technology used in animal health management. AS.07.01.01.b. Describe and demonstrate the proper use and function of specific tools and technology related to animal health management. AS.07.01.05.b. Assess the safety and effectiveness of facilities and equipment used for surgical and nonsurgical veterinary treatments and procedures.
Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text. WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Objectives	Activities	CT AFNR, NGSS, CCSS
Properly demonstrate specific veterinary clinical skills.	- Demonstrate proper procedures for collecting fecal samples and running a fecal float test - Demonstrate how to apply topical and administer oral medications to a variety of species - Identify the use of surgical tools and equipment and demonstrate how to properly clean and disinfect - Demonstrate proper procedures for collecting urine and processing samples - Demonstrate the ability to suture - Demonstrate the proper procedures for administering injections - Fill prescriptions and calculate dosages CVA Skill Validation Checklist	AS.02.02.01.c. AS.07.01.01.a. AS.07.01.01.b. AS.07.01.01.c. AS.07.01.05.a. AS.07.01.05.b. AS.07.01.05.c. RST.11-12.3. RST.11-12.4
Evaluate data from diagnostic measures and determine appropriate treatments for specific health concerns.	- Discuss the purpose and procedures of diagnostic tests used in veterinary medicine - Evaluate diagnostic test results and use to diagnose disease - Differentiate between different imaging techniques in veterinary medicine - Demonstrate the ability to assist with imaging processes and and analyze results CVA Skill Validation Checklist	AS.07.01.02.c. AS.07.01.05.a. AS.07.01.05.c. RST.11-12.3. RST.11-12.4 WHST.9-12.7 SL 11-12.1.

Unit 4	Veterinary Practice Management
Essential Questions	1. What career possibilities exist in veterinary science? 2. Why are good communication skills critical to employment in the veterinary field?

Priority Standards Assessed in Learning

Connecticut Agriculture, Food, and Natural Resources Standards	AS.02.01.03.a. Distinguish between animal husbandry practices that promote animal welfare and those that do not. AS.02.01.03.b. Analyze and document animal husbandry practices and their impact on animal welfare. CRP.01.01.02.c. Model personal responsibility in workplace and community situations. CRP.04.01.01.b. Analyze use of verbal and non-verbal communication strategies in workplace situations. CS.05.01.01.a. Identify and summarize the steps to pursue a career in an AFNR pathway (e.g., self-assessment, set goals, etc.).
Common Core State Standards	RST.11-12.4 Determine the meaning of words and phrases as they are used in text, including analyzing how an author uses and refines the meaning of a key term over the course of a text. SL 11-12.1. Initiate and participate effectively in a range of collaborative discussions (one on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Supporting Standards

Connecticut Agriculture, Food, and Natural Resources Standards	AS.08.02.01.a. Identify and summarize methods for ensuring optimal environmental conditions for animals. CRP.02.01.01.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.
Common Core State Standards	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.

Objectives	Activities	CT AFNR, NGSS, CCSS
Demonstrate effective communication skills in veterinary practices.	● Demonstrate proper use of veterinary medical and directional terminology and abbreviations ● Maintain veterinary medical records ● Demonstrate compassion and acceptable interpersonal skills while communicating with clients and animal owners	AS.02.01.03.b. CRP.01.01.02.c. CRP.02.01.01.c. CRP.04.01.01.b. RST.11-12.4 WHST 11-12.4
Investigate veterinary career pathways.	● Differentiate between the responsibilities of veterinary professionals ● Conduct an interview with a veterinary professional	CRP.01.01.02.c. CS.05.01.01.a. SL 11-12.1.
Properly maintain veterinary facilities and manage animal husbandry and health care needs.	● Perform maintenance tasks in the companion animal laboratory ● Care for the AgriScience program's animals	AS.02.01.03.a. AS.08.02.01.a. CRP.01.01.02.c. CRP.02.01.01.c.

Course Vocabulary:

Abaxial	Cystotomy	Medial plane	Radiography
Anterior	Distal	Osteoporosis	Rhinoplasty
Ascult	Dorsal	Ovariohysterectomy	Rostral
Axial	Electrocardiogram	Palmar	Sagittal plane
Cardiomegaly	Endoscopy	Palpate	SOAP
Caudal	Frontal plane	Plantar	Superficial
Chemotherapy	Gastropexy	Posterior	Transverse plane
Colitis	Hemorrhage	Problem Oriented Medical Record	Urinalysis
Cranial	Histology	Prognosis	Ventral
Cystocentesis	Hypocalcemia	Proximal	Vital Signs
	Lateral plane	Radiograph	

Assessments:
Lab activities
Class assignments
Quizzes/Tests
Projects

Connections to College/Career Readiness:
VET 101 (Introduction to Veterinary Technology - 3 credits) through Middlesex Community College
Certification in Veterinary Assisting through Animal Care Technologies

Resources/Materials:
Livestock and companion animals housed at LHS
Laboratory tools and supplies (microscopes, microscope slides and cover slips, etc.)
Veterinary tools and equipment (stethoscopes, otoscopes, refractometer, autoclave, etc.),
Animal management tools and equipment (leashes, muzzles, halters, scale, etc.)
The Merck Veterinary Manual
Local veterinary hospitals for field trips
Veterinary professionals and other industry careers as guest speakers
Animal Care Technologies web-based training programs
Middlesex Community College's Veterinary Technology program laboratory space and the college library's print and digital resources