



# **Ledyard Agri-Science & Technology Program**



## **Ag III & IV Plant Systems Curriculum**

# Agri-Science III & IV

## PLANT SYSTEMS (PS)

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.

**Plant Systems (PS):** encompasses the study of plant life cycles, classifications, functions, structures, reproduction, media and nutrients, as well as growth and cultural practices through the study of crops, turf grass, trees, shrubs and/or ornamental plants. 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 plant 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.

### PLANT SYSTEMS COURSES

<a href="#"><u>Supervised Agricultural Experience (SAE)</u></a>
<a href="#"><u>Basic Floral Art</u></a>
<a href="#"><u>Landscaping</u></a>
<a href="#"><u>Advanced Floral Design</u></a>
<a href="#"><u>Fundamentals of Horticulture</u></a>
<a href="#"><u>Natural Resources Management</u></a>

<b>Course Title</b>	<b>Supervised Agricultural Experience (SAE)</b>
<b>Agriculture Pathway</b>	All agricultural pathways
<b>Length of Course</b>	On-Going
<b>Ledyard High School Vision of the Graduate</b>	<p>Demonstrate an ability to work effectively with others, sharing ideas, acknowledging one another's strengths, and collaborating to produce presentations, projects, performances, or events.</p> <p>Demonstrate an ability to solve problems of varying complexity across a variety of content areas.</p> <p>Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas</p>
<b>Course Overview</b>	<p>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.</p> <p>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.</p>
<b>Units of Study</b>	<ol style="list-style-type: none"> <li>1. Develop an Approved Supervised Agricultural Experience (SAE) Program</li> <li>2. Record Keeping</li> <li>3. Employability Skills</li> </ol>

<b>Unit 1</b>	Develop an Approved Supervised Agricultural Experience (SAE) Program
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. What is an SAE and why is it important?</li> <li>2. What are the benefits of gaining employability skills for career growth?</li> </ol>

<b>Priority Standards Assessed in Learning</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>CRP.10.01.02.c. Match potential career opportunities in career clusters with personal interests, talents, goals and preferences.</p> <p>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.).</p> <p>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.).</p> <p>CS.03.01.02.a. Summarize the importance of safety, health and environmental management in the workplace.</p>
<b>Common Core State Standards</b>	<p>WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience</p> <p>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.</p>

<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>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.).</p> <p>CRP.10.02.01.a. Categorize career advancement requirements for potential careers (e.g., degrees, certification, training, etc.).</p> <p>CS.03.03.04.c. Create a plan to mitigate the level of contamination or injury identified as a risk in the workplace.</p>
<b>Common Core State Standards</b>	<p>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.</p>

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Identify local agricultural work experiences	<ul style="list-style-type: none"> <li>● Research and identify local 501(c)3 non profit organizations</li> <li>● Locate local agricultural businesses</li> <li>● Determine qualifications needed for employment</li> <li>● Call to inquire about agricultural position</li> </ul>	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	<ul style="list-style-type: none"> <li>● Identify agricultural interests</li> <li>● Develop work experience activities/projects in line with career goals</li> <li>● Write SMART goals for SAE growth and improvement</li> <li>● Obtain approval from parents/guardians and SAE advisor</li> <li>● Meet with SAE advisor during the school year and at least once during the summer</li> </ul>	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 <a href="#">AFNR standards</a>	<ul style="list-style-type: none"> <li>● Identify key skills necessary to complete the Structured Work-Based Learning Form</li> <li>● Complete appropriate CT Departments of Labor and Education forms for student work experience</li> </ul>	CS.03.01.02.a. WHST.11-12.4 RST.11-12.4

<b>Unit 2</b>	Record Keeping
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. Why is record keeping essential to an SAE experience?</li> <li>2. Why is documenting SAE experiences beneficial to a student?</li> </ol>

**Priority Standards Assessed in Learning**

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>CRP.03.02.01.a. Research and examine components in a personal financial management plan (e.g., income, expense, budgeting, savings, credit, etc.).</p> <p>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.).</p> <p>CRP.13.03.01.c. Apply for a chapter, state and national proficiency award that corresponds with an SAE program.</p>
<b>Common Core State Standards</b>	<p>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.</p> <p>WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience</p> <p>MP4 Model with mathematics</p>

**Supporting Standards**

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>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.</p>
<b>Common Core State Standards</b>	<p>MP6 Attend to precision</p>

Objectives	Activities	CT AFNR, NGSS, CCSS
Develop and maintain SAE records	<ul style="list-style-type: none"> <li>● Document time spent in SAE &amp; FFA activities, skills learned, income, and expenses</li> <li>● Utilize online record keeping program (<a href="#">AET</a>) to document records</li> <li>● Provide evidence of work using photographs, videos, and journals</li> </ul>	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 <a href="#">SAE and FFA awards</a>	<ul style="list-style-type: none"> <li>● Research SAE and FFA awards applicable to SAE experiences</li> <li>● Calculate SAE hours worked, income and expenses</li> <li>● Complete local, state, and national degree and award applications as applicable</li> </ul>	CRP.13.03.01.c. RST.11-12.4 WHST.11-12.4 MP6

<b>Unit 3</b>	Employability Skills
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. Why is it important to develop agricultural employability skills?</li> <li>2. What types of skills are needed for an entry level agricultural position?</li> </ol>

<b>Priority Standards Assessed in Learning</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems.</p> <p>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.).</p> <p>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.).</p> <p>CS.03.04.02.a. Identify standard tools, equipment and safety procedures related to AFNR tasks.</p> <p>CS.03.04.03.a. Read and interpret operating instructions related to operation, storage and maintenance of tools and equipment related AFNR tasks.</p> <p>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.</p>
<b>Common Core State Standards</b>	<p>WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience</p> <p>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.</p>

<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>CRP.01.01.02.a. Distinguish personal levels of responsibility, which can be applied in the workplace and community.</p> <p>CRP.10.03.01.a. Summarize ways that input and/or advice from career area experts could assist in planning personal career goals.</p> <p>CS.05.01.01.b. Create a personal plan outlining goals and steps to obtain a career in an AFNR pathway.</p>
<b>Common Core State Standards</b>	<p>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.</p>



Objectives	Activities	CT AFNR, NGSS, CCSS
Demonstrate effective and appropriate agricultural employability skills	<ul style="list-style-type: none"> <li>● Work safely and effectively in an SAE experience</li> <li>● Select and use appropriate PPE for SAE experiences</li> <li>● Report broken, chipped or cracked PPE to manager</li> <li>● Select and use appropriate tools and equipment for SAE experiences according to manufacturer's directions</li> <li>● Maintain professionalism and confidentiality in the workplace</li> <li>● Model listening and problem solving skills</li> </ul>	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	<ul style="list-style-type: none"> <li>● Provide evidence of work using photographs, videos, and journals</li> <li>● Write an annual summary of activities</li> <li>● Create quarterly and yearly SAE goals to grow or improve SAE experience</li> <li>● Share SAE experiences to educate others about additional options for SAE projects</li> </ul>	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	<ul style="list-style-type: none"> <li>● Research agricultural job openings</li> <li>● Create a cover letter and a resume</li> <li>● Complete a job application</li> <li>● Participate in a job interview</li> </ul>	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](http://www.theaet.com)  
SDE/SDOL employment forms [LED 75-1](#), [LED 31-23](#), [Unpaid](#)

<b>Course Title</b>	<b>Basic Floral Art</b>
<b>Agriculture Pathway</b>	Plant Systems
<b>Length of Course</b>	One Semester
<b>Ledyard High School Vision of the Graduate</b>	<p>Demonstrate an ability to communicate information clearly and effectively through a variety of media, including written, oral, visual, musical, and/or video productions.</p> <p>Demonstrate an ability to solve problems of varying complexity across a variety of content areas.</p> <p>Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content areas.</p> <p>Demonstrate creativity through their participation in fine arts courses as well as through their inventive approaches to learning activities in a variety of settings.</p>
<b>Course Overview</b>	<p>Floral Art is an introductory floral design class that exposes students to the basic styles of arrangements used for every day designs and special occasions: conical, round mound, oval, and asymmetrical arrangements, corsages, and boutonnieres. Students will study flower arrangements as an art form with emphasis on historical background, artistic principles, color harmony and care of perishable media. Individual expression is encouraged in the creation of floral composition.</p>
<b>Units of Study</b>	<ol style="list-style-type: none"> <li>1. Foundational Concepts</li> <li>2. Plant Handling</li> <li>3. Managing a Floral Shop</li> </ol>

<b>Unit 1</b>	Foundational Concepts
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. What are the functional parts of a plant?</li> <li>2. How have arrangements evolved over time?</li> <li>3. How are arrangements created?</li> </ol>

<b>Priority Standards Assessed in Learning</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.04.01.01.b. Demonstrate proper use of plants in their environment (e.g., focal and filler plants in floriculture, heat tolerant and shade plants in a landscape design, etc.).</p> <p>PS.04.02.02.b. Apply principles and elements of design that form the basis of artistic impression.</p> <p>CS.01.01.01.a. Examine historical and current data to identify issues impacting AFNR systems.</p>
<b>Common Core State Standards</b>	<p>WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.</p> <p>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.</p>

<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.04.02.03.b. Demonstrate the use of tools used for creating designs.</p>
<b>Common Core State Standards</b>	<p>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</p>

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Identify floral design eras and compare styles, colors, and uses of flowers during those times	<ul style="list-style-type: none"> <li>• Create a table identifying floral design <a href="#">eras</a>, styles, and uses .</li> <li>• Create a <a href="#">project</a> picturing contemporary floral arrangements depicting assigned design eras.</li> <li>• Compare and classify given designs by design period.</li> </ul>	CS.01.01.01.a. SL 11-12.1. WHST 11-12.4. RST.11-12.4.
Identify and use color harmonies effectively	<ul style="list-style-type: none"> <li>• Create a <a href="#">color wheel</a> and identify six color harmonies.</li> <li>• Identify color harmonies of grouped flowers or objects.</li> <li>• Select appropriate floral materials using <a href="#">color theory</a>.</li> </ul>	PS.04.02.02.b. WHST 11-12.4. RST.11-12.4.
Create arrangements based on design elements	<ul style="list-style-type: none"> <li>• Identify design <a href="#">elements and principles</a>.</li> <li>• Apply multiple design elements and principles into a 3D design.</li> <li>• Create 2D designs based on discussed principles and elements of design.</li> <li>• Utilize correct <a href="#">tools</a> when creating arrangements.</li> </ul>	PS.04.01.01.b. PS.04.02.03.b. RST.11-12.4.

<b>Unit 2</b>	Plant Handling
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. How are plants properly cared for when they enter the floral shop?</li> <li>2. How are containers chosen for an arrangement?</li> </ol>

### Priority Standards Assessed in Learning

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	PS.04.01.02.c. Evaluate a design and provide feedback and suggestions for improvement (e.g., a floral arrangement, a landscape or a landscape plan, etc.). PS.04.02.01.b. Demonstrate appropriate conditioning and storage of cut flowers. PS.02.01.01.a. Identify and summarize systems used to classify plants based on specific characteristics
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<b>Common Core State Standards</b>	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience. RST.11-12.3. 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.
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<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	PS.04.01.02.b. Create a design utilizing plants in their proper environments. PS.04.02.02.b. Apply principles and elements of design that form the basis of artistic impression.
<b>Common Core State Standards</b>	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

<b>Objectives</b>	<b>Activities</b>	<b>CT AFNR, NGSS, CCSS</b>
Implement practices to extend the life of cut flowers and greens	<ul style="list-style-type: none"> <li>● Create and conduct an experiment to determine the best practice for processing lilies .</li> <li>● Use data from <a href="#">lily lab</a> to determine the best course of action in treating lilies and similar flowers.</li> <li>● Write a lab report based on the results from the lily lab.</li> <li>● Condition purchased flowers appropriately to ensure a long life.</li> <li>● Identify plant <a href="#">care and handling</a> for different types of plants used in the industry.</li> <li>● Create a portfolio of plants used and identify vase life, uses, description, etc.</li> </ul>	PS.04.02.01.b. PS.02.01.01.a. WHST 11-12.4.
Evaluate floral arrangements using design rubrics	<ul style="list-style-type: none"> <li>● Critique a given floral arrangement and provide suggestions for improving the design.</li> <li>● Identify aspects of floral design standards in an exemplar.</li> <li>● Use floral design rubrics to evaluate <a href="#">arrangements</a>, <a href="#">corsages</a> and <a href="#">bows</a>.</li> <li>● Implement design principles when creating or modifying an arrangement.</li> </ul>	PS.04.01.02.c. PS.04.01.02.b. WHST 11-12.4

	<ul style="list-style-type: none"> <li>Assess arrangements and in writing indicate how each arrangement meets each design principle.</li> <li>Utilize the <a href="#">Flower School Library</a> to help in development of arrangement ideas.</li> </ul>	
Use available floral materials to create standard floral designs incorporating design principles	<ul style="list-style-type: none"> <li>Create arrangements following class models: round mound, conical, triangular, scalene triangle.</li> <li>Select appropriate flowers to complete required design styles.</li> <li>Select appropriate flowers based on size, color, and use in designs.</li> <li>Individualize arrangements by selecting appropriate floral materials and accents.</li> <li>Select appropriate plants and construct a dish garden.</li> <li>Write detailed <a href="#">instructions</a> on creating arrangements including floral goods, hard goods, time allotted, step by step instructions, etc.</li> </ul>	PS.04.01.02.b. PS.04.01.02.c. PS.04.02.02.b. PS.02.01.01.a WHST 11-12.4 RST.11-12.3. RST.11-12.4.

<b>Unit 3</b>	Managing a Floral Shop
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>What are the differences between wholesale cost and retail cost?</li> <li>What are the components of creating a floral shop?</li> </ol>

<b>Priority Standards Assessed in Learning</b>	
<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	ABS.04.01.03.c. Prepare a business plan for an AFNR business. PS.04.01.01.c. Install plants according to a design plan that uses the proper plants based on the situation and environment. CS.01.01.02.b. Analyze current trends in AFNR systems and predict their impact on local, state, national and global levels PS.04.01.02.b. Create a design utilizing plants in their proper environments.
<b>Common Core State Standards</b>	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 WHST.11-12.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>ABS.02.02.02.b. Use accounting information to prepare financial reports associated with inventory in AFNR businesses (e.g., cost of goods sold, margins on goods, etc.).</p> <p>ABS.04.02.01.a. Identify and define the components of operational plans in AFNR businesses (e.g., location, supply and inventory management, production and distribution, organization structure, etc.)</p> <p>PS.04.02.03.c. Choose and properly use appropriate tools to create a desired design.</p> <p>PS.04.02.02.b. Apply principles and elements of design that form the basis of artistic impression.</p> <p>ABS.01.01.01.a. Examine and provide examples of microeconomic principles related to decisions about AFNR business inputs and outputs (e.g., supply, demand and equilibrium, elasticity, diminishing returns, opportunity cost, etc.).</p> <p>ABS.01.02.01.c. Create and disseminate statements of purpose for activities in AFNR businesses.</p>
<b>Common Core State Standards</b>	<p>WHST.11-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.</p>

Objectives	Activities	CT AFNR, NGSS, CCSS
Determine economic value of raw materials and finished products	<ul style="list-style-type: none"> <li>● Calculate wholesale costs and retail costs based on current market values.</li> <li>● Create arrangements, calculate costs and identify target markets.</li> <li>● Analyze floral market <a href="#">data</a>.</li> </ul>	CS.01.01.02.b. ABS.01.01.01.a. RST.11-12.4. WHST.11-12.9.
Implement business practices	<ul style="list-style-type: none"> <li>● Design a <a href="#">window display</a> following a specific theme.</li> <li>● Understand inventory costs and develop an inventory list.</li> <li>● Create a business plan for opening a floral shop.</li> <li>● Update resumes.</li> <li>● Create a cover letter.</li> <li>● Understand how to apply for a loan to open a business.</li> </ul>	ABS.02.02.02.b. ABS.04.02.01.a. ABS.01.01.01.a ABS.01.02.01.c ABS.04.01.03.c. RST.11-12.4. WHST.11-12.2. WHST.11-12.9.
Implement floral design sales related to current seasons and holidays	<ul style="list-style-type: none"> <li>● Identify retail cost for arrangements.</li> <li>● Create arrangements using floral and hard goods.</li> <li>● Create arrangements using elements and principles of design.</li> </ul>	PS.04.02.03.c. PS.04.02.02.b. PS.04.01.02.b. PS.04.01.01.c.



	<ul style="list-style-type: none"> <li>• Advertise their sales through different avenues, (Social media, fliers, school announcements, etc.)</li> <li>• Implement a pick up and delivery system for sold arrangements.</li> </ul>	RST.11-12.4.
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<b>Vocabulary:</b> Analogous Color Harmony Negative Space Rhythm Tint Complementary Color Harmony Physical and Visual Balance Scale	Tone Conditioning Physical Stability Shade Harmony/Unity Polychromatic Color Harmony Split Complementary Color Harmony	Monochromatic Color Harmony Proportion Tetrad Color Harmony
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<b>Assessments:</b> Quizzes Class assignments Floral design projects Floral portfolio Identification Quizzes
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<b>Connections to College/Career Readiness:</b> UConn Early College Experience Course (2 Credits)
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<b>Resources/Materials:</b> CT Florist Association Floral materials will be selected based on season and availability Hard goods: floral shears, floral foam, design bowls, bouquet holders, polished stone/marbles, floral tape & wire, satin, organza, wired ribbons Text: <u>The Art of Floral Design</u> , Hunter Text: <u>Florists' Review Design School</u> Text: <u>Floriculture: Designing &amp; Merchandising</u> , Griner "Complete ID Preparation for the National FFA Floriculture CDE" Resource guide Floral design rubric <a href="http://www.floristsreview.com">www.floristsreview.com</a> <a href="http://www.ftd.com">www.ftd.com</a>
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[www.teleflora.com](http://www.teleflora.com)

[www.1800flowers.com](http://www.1800flowers.com)

<https://www.floraldesigninstitute.com/>

<b>Course Title</b>	<b>Landscaping</b>
<b>Agriculture Pathway</b>	Plant Systems
<b>Length of Course</b>	One Semester
<b>Ledyard High School Vision of the Graduate</b>	<p>Demonstrate an ability to communicate information clearly and effectively through a variety of media, including written, oral, visual, musical, and/or video productions.</p> <p>Demonstrate an ability to solve problems of varying complexity across a variety of content areas.</p> <p>Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content area.</p> <p>Demonstrate creativity through their participation in fine arts courses as well as through their inventive approaches to learning activities in a variety of settings.</p>
<b>Course Overview</b>	As part of the introductory work in landscape design students will learn to identify common herbaceous perennials as well as cultural information about the plants. Basic landscape design principles will be discussed and compared to floral design principals. Students will have the opportunity to develop garden plans for various uses/situations. Students will have the opportunity to learn both hand tools and power equipment.. Students will also compare the use of annuals and perennials in gardens and assist customers with selecting appropriate plants for their gardens during the spring plant sales.
<b>Units of Study</b>	<ol style="list-style-type: none"> <li>1. Landscape Foundational Concepts</li> <li>2. Landscape Equipment and Maintenance</li> <li>3. Landscape Design</li> </ol>

<b>Unit 1</b>	Landscape Foundational Concepts
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. How is a plan for a landscape design developed?</li> <li>2. How are materials chosen for landscapes?</li> <li>3. What factors affect the success of a landscape?</li> </ol>

**Priority Standards Assessed in Learning**

<p><b>Connecticut Agriculture, Food, and Natural Resources Standards</b></p>	<p>PS.04.02.02.b. Apply principles and elements of design that form the basis of artistic impression.                  PS.03.02.01.b. Inspect propagation material for evidence of pests or disease.                  PS.02.01.03.b. Classify plants, grown in Connecticut as having an annual, biennial, or perennial life cycle.                  PS.01.01.01.b. Calculate the maintenance and purchase cost of tools, machines and equipment used in plant science systems.</p>
<p><b>Common Core State Standards</b></p>	<p>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.                  MP.4. Model with mathematics.</p>

**Supporting Standards**

<p><b>Connecticut Agriculture, Food, and Natural Resources Standards</b></p>	<p>PS.02.01.02.c. Identify and describe important plants to agricultural and ornamental plant systems by scientific names.                  PS.02.01.03.c. Evaluate reasons why species of plants can be annual in one growing zone and perennial in another growing zone.                  PST.01.02.02.b. Calculate the maintenance and purchase cost of tools, machines and equipment used in AFNR including explaining the difference of and applications for corded and cordless tools.</p>
<p><b>Common Core State Standards</b></p>	<p>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.</p>

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
<p>Develop landscape plans created for customers</p>	<ul style="list-style-type: none"> <li>● Use landscape design tools to draw landscape features to scale (French curve, landscape templates, engineering scales).</li> <li>● Apply landscape design <a href="#">principles</a> to a unique perennial garden plan.</li> <li>● Use a CAD program to develop a landscape design.</li> <li>● Evaluate landscapes utilizing design rubrics.</li> </ul>	<p>PS.04.02.02.b.                  SL.11-12.5.                  RST.11-12.4.</p>
<p>Determine the most appropriate landscape plants to use in gardens</p>	<ul style="list-style-type: none"> <li>● Identify common perennials and annuals.</li> <li>● Use online and print sources to collect photos for identification and study.</li> <li>● Practice <a href="#">identification</a> using pictures and live samples.</li> </ul>	<p>PS.02.01.03.b.                  SL.11-12.5.</p>

	<ul style="list-style-type: none"> <li>• Use cultural information on perennials and annuals to select appropriate plants for specific garden uses.</li> <li>• Identify plants most suitable for sustainable landscaping.</li> </ul>	
Determine economic value of raw materials and finished products	<ul style="list-style-type: none"> <li>• Determine the time, labor, equipment and materials required to service a property and estimate charges to the client.</li> <li>• Interview the owner of a landscaping business. Collect information on the methods used to maintain property and determine fees</li> </ul>	PS.01.01.01.b. PST.01.02.02.b. RST.11-12.4. MP.4.
Analyze plants and insects that can affect landscape design	<ul style="list-style-type: none"> <li>• Identify weeds through practice and photos.</li> <li>• Devise a plan to reduce or eliminate weeds in a landscape.</li> <li>• <u>Identify</u> a variety of pests that are harmful to landscapes.</li> <li>• Create an Integrated Pest Management plan to reduce the amount of insects in a landscape.</li> <li>• Understand and identify beneficial insects such as lacewing, lady bug, wasps, etc.</li> </ul>	PS.02.01.02.c. PS.03.02.01.b. RST.11-12.4.

<b>Unit 2</b>	Landscape Equipment and Maintenance
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. What equipment is used to properly maintain a landscape?</li> <li>2. How does the care and maintenance differ from lawns, utility, sport turf and golf courses?</li> </ol>

<b>Priority Standards Assessed in Learning</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	PS.06.01.01.a. Select and safely use the following hand tools and equipment in the landscape industry: garden rake, leaf rake, shovel, spade, hand shears, loppers, rotary spreader, and drop spreader PS.01.03.01.c. Create a fertilizer plan for a plant species to ensure the plant receives the proper amount of N, P and K PS.01.01.01.b. Calculate the maintenance and purchase cost of tools, machines and equipment used in plant science systems
<b>Common Core State Standards</b>	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience MP 4 Model with mathematics MP 5 Use appropriate tools strategically

**Supporting Standards**

<p><b>Connecticut Agriculture, Food, and Natural Resources Standards</b></p>	<p>PS.10.03.01.b. Develop a plan for mowing, thatching and aerating established lawns.          PS.11.01.01.a. Identify the steps needed to properly plan and layout a sports turf field.          PS.08.01.01.b. Explain the four main applications of turf: lawns, utility, sports turf, and golf courses.          PST.02.01.01.a. Maintain the cleanliness and appearance of equipment, machinery and power units used in AFNR power, structural and technical systems to assure proper functionality.          PST.02.02.02.b. Apply safety principles and applicable regulations to operate equipment, machinery and power units used in AFNR power, structural and technical systems.</p>
<p><b>Common Core State Standards</b></p>	<p>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.</p>

Objectives	Activities	CT AFNR, NGSS, CCSS
<p>Identify and operate equipment commonly used in the industry safely</p>	<ul style="list-style-type: none"> <li>● <u>Identify</u> common equipment used in the industry.</li> <li>● Maintain a clean and safe work environment.</li> <li>● Demonstrate procedures for maintaining a safe working environment.</li> <li>● Identify hazards inherent to working in the shop and in the field.</li> <li>● Clean, sharpen and lubricate hand tools.</li> </ul>	<p>PS.06.01.01.a          PST.02.01.01.a.          RST.11-12.4.</p>
<p>Understand and implement practices used to help maintain equipment properly</p>	<ul style="list-style-type: none"> <li>● Clean and perform routine maintenance tasks to prepare landscape equipment for the season or for storage.</li> <li>● Develop a preventive maintenance schedule for equipment based on manufacturers recommendations and good practice.</li> </ul>	<p>PS.01.01.01.b.          PST.02.02.02.b.          WHST 11-12.4          RST.11-12.4.</p>
<p>Identify and implement practices utilized in the turf industry.</p>	<ul style="list-style-type: none"> <li>● Develop a plan for fertilizing, mowing and irrigating lawns, turf, and golf courses.</li> <li>● Identify the daily operations of a golf course manager.</li> <li>● Fertilize plants in the greenhouse and in established gardens.</li> <li>● Create a schedule for plant care, maintenance, fertilizing, re-seeding, etc.</li> </ul>	<p>PS.10.03.01.b.          PS.11.01.01.a.          PS.01.03.01.c.          PS.08.01.01.b.          WHST 11-12.4          MP 4          MP 5</p>

<b>Unit 3</b>	Landscaping Design
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. What are the steps to creating and implementing a landscape?</li> <li>2. What are the techniques for growing, propagating and implementing plants into a design?</li> </ol>

<b>Priority Standards Assessed in Learning</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.04.01.01.c. Install plants according to a design plan that uses the proper plants based on the situation and environment.</p> <p>PS.01.03.02.c. Fertilize plants with N, P, and k based on the nutrient need of the plant.</p> <p>PS.03.02.02.b. Prepare soil and growing media for planting with the addition of amendments.</p> <p>PS.04.02.03.c. Choose and properly use appropriate tools to create a desired design.</p>
<b>Common Core State Standards</b>	<p>WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-PS3-4),(HS-PS3-5)</p> <p>MP 4 Model with mathematics</p> <p>MP 5 Use appropriate tools strategically</p>

<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.04.01.02.c. Evaluate a design and provide feedback and suggestions for improvement (e.g., a floral arrangement, a landscape or a landscape plan, etc.).</p> <p>PS.01.03.01.b. Explain the appearance of plants that have a deficiency of N, P, and/or K.</p> <p>PS.01.04.03.a. Collect soil and plant tissue samples using generally accepted procedures and explain how incorrect sample collection will affect the results of a laboratory analysis.</p>
<b>Common Core State Standards</b>	<p>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.</p>

Objectives	Activities	CT AFNR, NGSS, CCSS
Implement designs created for clients	<ul style="list-style-type: none"> <li>● Using plants learned in class, select appropriate plants in response to specific situations.</li> <li>● Identify and use hardscape items in garden designs.</li> <li>● Create a cohesive garden design for a large perennial garden utilizing common perennials and hardscape.</li> <li>● Use sustainable landscaping principles to design gardens with the least possible environmental impacts.</li> <li>● Propose solutions to landscape problems using appropriate plants.</li> <li>● Create a cohesive garden design for a given large perennial garden utilizing common perennials and hardscape to ensure four season interest.</li> </ul>	PS.04.01.01.c PS.04.01.02.c PS.01.04.03.a PS.03.02.02.b PS.04.02.03.c SL.11-12.4
Implement practices used in the Nursery Landscape Industry for crop production	<ul style="list-style-type: none"> <li>● Identify specific crop needs and timing necessary to produce a mature crop.</li> <li>● Read seed packages and determine the best time to start seeds to guarantee mature plants at a preselected time.</li> <li>● Monitor light needs of crops and use shading or grow lights to provide appropriate light/dark hours.</li> <li>● Perform tasks necessary to maintain a crop: pinch, fertilize, water, space, maintain sanitation.</li> <li>● Monitor and adjust computerized greenhouse control system based on crop needs and current greenhouse conditions (temperature, light, relative humidity).</li> <li>● Assess data from spring plant sales and suggest changes for plant varieties and sizes for the next sale.</li> <li>● Understand the Nursery Landscape Industry by working with local growers and operators.</li> <li>● Work with fertilizers on specific plants.</li> <li>● Implement a fertilizing plan for greenhouse and nursery crops.</li> </ul>	PS.01.03.02.c PS.01.03.01.b PS.01.04.03.a PS.04.02.03.c WHST.9-12.9 MP 4 MP 5
Utilize the proper equipment to care for landscape designs	<ul style="list-style-type: none"> <li>● Identify the various reasons for pruning.</li> <li>● Discriminate between pruning and shearing and describe when each would be used.</li> <li>● Demonstrate proper pruning techniques on landscape trees and shrubs.</li> <li>● Understand different methods of removing disease, infected</li> </ul>	PS.04.02.03.c PS.03.02.02.b WHST.9-12.9



	<p>or dying plants.</p> <ul style="list-style-type: none"> <li>• Understand plant care methods and how they vary from plant to plant.</li> <li>• Explain how soil affects the growth of the plants.</li> <li>• Explain how amendments to the soil change the growth of the plants.</li> </ul>	
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<b>Vocabulary:</b>	Thatch	Landscape template
Cool-season grasses	Water sprout	Landscape Design
Sucker	Biennial	Corm
Warm-season grasses	Garden Design	Bulb
Annual	Hardscape	Herbaceous
Engineer's scale	Native plant	Terrain
Accent plant	Exotic plant	Turf
Dormancy	Specimen plant	Perennial
Massing plants	Sod	Distal features
Zoning	Thinning	Sustainable landscaping
Seeding	Winterize	Crown

<b>Assessments:</b>
Identification quizzes
Design Projects
Landscape Problem assignments
Garden plan designs
Written quizzes and tests

<b>Connections to College/Career Readiness:</b>
OSHA 10 hour Course

<b>Resources/Materials:</b>
Print and on-line plant catalogs
Landscape design tools: French curves, landscape templates, engineer's scales, compasses
<a href="http://www.ladybug.uconn.edu">www.ladybug.uconn.edu</a>
<a href="http://www.gardening.cornell.edu">www.gardening.cornell.edu</a>
Connecticut Nursery and Landscape Association <a href="https://www.cnla.biz/">https://www.cnla.biz/</a>

Ornamental Horticulture, Ingels, Delmar

OSHA Landscape Hazards and Solutions materials found at <https://www.osha.gov/SLTC/landscaping/hazards.html>

Pruning Techniques; Brooklyn Botanic Garden Record. Cook. Sterling Pub (Brooklyn Botanical Garden)

Turfgrass extension information found at <http://plantscience.psu.edu/research/centers/turf/extension>

Working in Horticulture. Richardson and Moore. McGraw-Hill, 1980

<b>Course Title</b>	<b>Advanced Floral Design</b>
<b>Agriculture Pathway</b>	Plant Systems
<b>Length of Course</b>	One Semester
<b>Ledyard High School Vision of the Graduate</b>	<p>Demonstrate an ability to communicate information clearly and effectively through a variety of media, including written, oral, visual, musical, and/or video productions.</p> <p>Demonstrate an ability to solve problems of varying complexity across a variety of content areas.</p> <p>Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content area.</p> <p>Demonstrate creativity through their participation in fine arts courses as well as through their inventive approaches to learning activities in a variety of settings.</p>
<b>Course Overview</b>	<p>Advanced Floral Art provides students with a more rigorous application of floral design principles. Students will build on skills learned in previous classes and will apply those skills to more contemporary designs and event work. A key component of this class will be pre-planning: students will design and prepare flower orders for their own arrangements as well as real or hypothetical customers. As part of the unit students will prepare floral accents for events such as weddings, junior and senior proms, Agri-Science award ceremony, Administrative Professional and School Paraprofessional days, etc.</p>
<b>Units of Study</b>	<ol style="list-style-type: none"> <li>1. Event Planning</li> <li>2. Specialty Designs</li> <li>3. Indoor Plants</li> </ol>

<b>Unit 1</b>	Event Planning
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. How does a floral shop prep and plan for an event (wedding, funeral, prom, etc.)?</li> <li>2. How is cost determined for events?</li> </ol>

<b>Priority Standards Assessed in Learning</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.04.02.01.b. Demonstrate appropriate conditioning and storage of cut flowers.</p> <p>PS.04.01.01.c. Install plants according to a design plan that uses the proper plants based on the situation and environment.</p> <p>PS.04.01.02.c. Evaluate a design and provide feedback and suggestions for improvement (e.g., a floral arrangement, a landscape or a landscape plan, etc.).</p>
<b>Common Core State Standards</b>	<p>WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.</p> <p>MP.4 Model with mathematics</p>

<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.04.01.01.a. Identify and categorize plants by their purpose (e.g., floral plants, landscape plants, house plants, etc.).</p> <p>PS.04.02.03.b. Demonstrate the use of tools used for creating designs.</p> <p>ABS.05.03.01.a. Identify and explain marketing principles used in AFNR businesses (e.g., 4 P's- product, place, price, promotion; attention, interest, desire, action, etc.).</p> <p>ABS.03.01.01.a. Compare and contrast components of cash budgets (e.g., anticipated revenue, production costs, overhead costs, profit, etc.) and identify the appropriate components to include in a budget given the nature of the AFNR enterprise.</p>
<b>Common Core State Standards</b>	<p>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</p> <p>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.</p> <p>MP.1. Make sense of problems and persevere in solving them.</p>

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Develop sketches and plan for specific designs and event flowers	<ul style="list-style-type: none"> <li>● Interview a potential “client” to determine needs and interests and create a design to fulfill those requirements.</li> <li>● Develop design samples and present design to a panel of judges.</li> <li>● Create a sketch for proposed designs for single arrangements or events.</li> </ul>	PS.04.02.02.b. PS.04.02.02.c. PS.04.01.02.b. RST.11-12.4
Evaluate floral arrangements using design rubrics	<ul style="list-style-type: none"> <li>● Use floral design <a href="#">rubrics</a> to evaluate arrangements.</li> <li>● Implement design principles when creating or modifying an arrangement.</li> <li>● Assess arrangements and in writing indicate how each arrangement meets each design principle.</li> </ul>	PS.04.01.02.c. PS.04.02.02.c. SL 11-12.1 MP.1.
Determine economic value of raw materials and finished products	<ul style="list-style-type: none"> <li>● Explain factors that affect wholesale costs and retail pricing of floral designs particularly for those associated with special events.</li> <li>● Determine the amount and types of materials used in an arrangement and calculate the wholesale cost and an appropriate retail price.</li> <li>● Justify cost alternatives in two similar designs.</li> </ul>	ABS.03.01.01.a. ABS.05.03.01.a. MP 4

<b>Unit 2</b>	Specialty Designs
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. How are arrangements made using non floral and dried floral items?</li> <li>2. How are highly stylized floral arrangements made?</li> </ol>

<b>Priority Standards Assessed in Learning</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.02.02.01.a. Identify and describe the function(s) of the following plant parts: leaf, blade, petiole, flower, stamen, pistil, stem, nodes, roots, and root hairs.</p> <p>PS.04.01.01.b. Demonstrate proper use of plants in their environment (e.g., focal and filler plants in floriculture, heat tolerant and shade plants in a landscape design, etc.).</p> <p>PS.04.01.02.c. Evaluate a design and provide feedback and suggestions for improvement (e.g., a floral arrangement, a landscape or a landscape plan, etc.).</p>
<b>Common Core State Standards</b>	<p>WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.</p> <p>MP.4 Model with mathematics</p>

<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.04.02.02.c. Analyze designs to identify use of design principles and elements.</p> <p>ABS.01.01.02.b. Analyze and describe the relationship between AFNR business and industry outputs and domestic and global macroeconomic trends (e.g., Gross Domestic Product, national income, rate of growth, price levels, etc.).</p>
<b>Common Core State Standards</b>	<p>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.</p> <p>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.</p>

Objectives	Activities	CT AFNR, NGSS, CCSS
Create arrangements utilizing non traditional floral materials	<ul style="list-style-type: none"> <li>● Create arrangements using dried flowers and non floral materials such as silk flowers and paper flowers.</li> <li>● Evaluate arrangements utilizing rubrics.</li> <li>● Critique arrangements and make suggestions for improvement.</li> <li>● Calculate the cost of the arrangement using receipts from flowers purchased.</li> <li>● Identify plants commonly used in the industry and how they are cared for and utilized in an arrangement.</li> </ul>	PS.04.02.02.c. PS.04.01.02.b. RST.11-12.3 SL 11-12.1 MP. 4
Interpret market trends in the floral industry	<ul style="list-style-type: none"> <li>● Analyze current floral <a href="#">industry</a> trends and create contemporary designs.</li> <li>● Identify differences between types of oriental arrangements.</li> <li>● Create high style arrangements.</li> </ul>	ABS.01.01.02.b. PS.04.01.01.b. PS.04.01.02.c. WHST 11-12.4

<b>Unit 3</b>	Indoor Plants
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. How are indoor plants utilized in the floral industry?</li> <li>2. What care, handling and marketing techniques are used to sell indoor plants?</li> </ol>

<b>Priority Standards Assessed in Learning</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.01.01.01.a. Identify and summarize the three measurements of light – color, intensity and duration – that affect plant growth.</p> <p>PS.01.02.01.a. Identify the major components of growing media and describe how growing media support plant growth.</p> <p>PS.01.03.01.a. Describe the role of N, P, and K in regards to vegetative growth, root development, seed production, and plant stress.</p>
<b>Common Core State Standards</b>	<p>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.</p> <p>WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience</p>

<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.01.03.01.b. Explain the appearance of plants that have a deficiency of N, P, and/or K.</p> <p>PS.01.03.02.a. Identify the following from a label of a fertilizer container: percentage of N, P, and K, and calculate the actual amount of the nutrient(s) in the container.</p>
<b>Common Core State Standards</b>	<p>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.</p>



Objectives	Activities	CT AFNR, NGSS, CCSS
Execute proper growing techniques for plants in the floral industry.	<ul style="list-style-type: none"> <li>● Identify light, water and fertilizer requirements for indoor plants.</li> <li>● Distinguish growing media requirements for indoor plants.</li> </ul>	PS.01.01.01.a. PS.01.02.01.a. PS.01.02.02.a. PS.02.02.01.a. WHST 11-12.4
Market, sell, and care for plants based on holiday and occasions.	<ul style="list-style-type: none"> <li>● Demonstrate marketing techniques based on holidays and plants.</li> <li>● Identify proper packaging techniques for potted plants based on specific holidays or occasions.</li> <li>● Create sales flyers for arrangement and plant sales.</li> <li>● Care for plants being used for sale.</li> <li>● Calculate wholesale costs of arrangements for sale and determine retail costs.</li> </ul>	PS.02.01.01.a. PS.03.05.05.b. WHST 11-12.4 WHST.11-12.2a

<b>Course Vocabulary:</b>	
<p>Abstract design Biedermeier Cascade bouquet Casket saddle Casket spray Chaplet/halo Ikebana Naturalistic design Pavé Percentage mark-up Presentation bouquet</p>	<p>Ratio mark-up Shin/subject line Soe/secondary line Standard divisional pricing Tai/object line Varied divisional pricing Vegetative design Vignette Waterfall design Wreath bouquet</p>

<p><b>Assessments:</b> Quizzes Class assignments Floral design projects Floral portfolio</p>
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**Connections to College/Career Readiness:**

UConn Early College Experience Course (2 Credits)

**Resources/Materials:**

Floral materials will be selected based on season and availability

Hard goods: floral shears, floral foam, design bowls, bouquet holders, polished stone/marbles, floral tape & wire, satin, organza, wired ribbons

Text: The Art of Floral Design, Hunter

Text: Florists' Review Design School

Text: Floriculture: Designing & Merchandising, Griner

"Complete ID Preparation for the National FFA Floriculture CDE" Resource guide

Floral design rubric

[www.floristsreview.com](http://www.floristsreview.com)

[www.ftd.com](http://www.ftd.com)

[www.teleflora.com](http://www.teleflora.com)

[www.1800flowers.com](http://www.1800flowers.com)

<b>Course Title</b>	<b>Fundamentals of Horticulture</b>
<b>Agriculture Pathway</b>	Plant Systems
<b>Length of Course</b>	One semester
<b>Ledyard High School Vision of the Graduate</b>	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 area. Demonstrate an ability to communicate information clearly and effectively through a variety of media, including written, oral, visual, musical, and/or video productions.
<b>Course Overview</b>	Fundamentals of Horticulture proves students with a more rigorous application of greenhouse practices as well as other horticulture industries. Students will study the science and practice of horticultural plant propagation and culture, basic concepts of plant structure, growth and function, integrated pest management, the impact of new technology and how horticulture has an impact on the environment.
<b>Units of Study</b>	<ol style="list-style-type: none"> <li>1. Plant Structure, Growth and Function</li> <li>2. Pests and Pest Management</li> <li>3. Soil and Soil Fertility</li> <li>4. Industries in Horticulture</li> <li>5. Business and Careers</li> </ol>

<b>Unit 1</b>	Plant Structure, Growth and Function
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. How are plants and plant structures classified and identified?</li> <li>2. How do plants reproduce?</li> <li>3. How do plants grow?</li> </ol>

### Priority Standards Assessed in Learning

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.02.03.01.a. Summarize the importance of photosynthesis to plant life on earth and the process of photosynthesis, including the types (c3, c4, Cam), its stages (e.g., light-dependent and light independent reactions), and its products and byproducts.</p> <p>PS.01.01.02.b. Determine the optimal air and temperature conditions for plant growth.</p> <p>PS.02.01.01.c Identify and summarize systems used to classify plants based on specific characteristics.</p>
<b>Next Generation Science Standards</b>	HS-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy
<b>Common Core State Standards</b>	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

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.02.03.04.b. Analyze and identify the plant responses to plant growth regulators and different forms of tropism.</p> <p>PS.02.03.02.a. Summarize the stages of cellular respiration including their products and byproducts.</p> <p>PS.02.03.02.b. Analyze the factors that affect cellular respiration processes and rate in a crop production setting.</p> <p>PS.02.01.03.b. Classify plants, grown in Connecticut as having an annual, biennial, or perennial life cycle.</p>
<b>Common Core State Standards</b>	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
Explain plant Processes	<ul style="list-style-type: none"> <li>● Comprehend and interpret <a href="#">photosynthesis</a>.</li> <li>● Comprehend and interpret Cellular <a href="#">Respiration</a>.</li> <li>● Comprehend and interpret transpiration.</li> <li>● Describe environmental factors that affect plant growth.</li> </ul>	PS.02.03.02.a PS.02.03.02.b. PS.01.01.02.b. HS-LS1-7
Demonstrate communication skills using industry language	<ul style="list-style-type: none"> <li>● Use a plant key.</li> <li>● Describe the natural classification system for the plant kingdom.</li> <li>● Describe and use scientific names correctly.</li> <li>● Define common taxonomy and professional terms.</li> <li>● Describe plants using taxonomic terms.</li> <li>● Identify plants based on features.</li> </ul>	PS.02.01.01.c PS.02.01.03.b.. RST.11-12.4 WHST 11-12.4
Differentiate between types of growth regulators	<ul style="list-style-type: none"> <li>● List at least three different types of naturally occurring growth regulators and their effects on plants.</li> <li>● List several commercial products that regulate plant growth.</li> <li>● Compare natural growth regulators and commercial growth regulators.</li> </ul>	PS.01.01.02.b. PS.02.01.03.b. PS.02.03.04.b RST.11-12.4 WHST 11-12.4

<b>Unit 2</b>	Pests and Pest Management
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. What common pests are found in greenhouses and nurseries?</li> <li>2. How are pests prevented, controlled, and removed?</li> </ol>

<b>Priority Standards Assessed in Learning</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	PS.03.03.01.c. Devise solutions for plant pests, diseases and disorders. PS.03.03.03.c. Employ pest management strategies to manage pest populations, assess the effectiveness of the plan and adjust the plan as needed.
<b>Common Core State Standards</b>	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.

<b>Supporting Standards</b>
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<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	PS.03.03.02.a. Diagram the life cycle of major plant pests and diseases. PS.03.03.04.b. Examine and apply procedures for the safe handling, use and storage of pesticides including personal protective equipment and reentry interval.
<b>Common Core State Standards</b>	WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.

<b>Objectives</b>	<b>Activities</b>	<b>CT AFNR, NGSS, CCSS</b>
Analyze plant pests	<ul style="list-style-type: none"> <li>● Characterize insects and groups of pathogens as plant pests.</li> <li>● List principles of pest control.</li> <li>● Explain the concept of <a href="#">integrated pest management</a>.</li> <li>● Develop an integrated pest management plan.</li> <li>● Identify common greenhouse pests.</li> <li>● Determine pest activity using monitoring cards.</li> <li>● Identify means of biological control in the greenhouse.</li> <li>● Identify the action threshold for pests in the greenhouse and determine an appropriate course of action to deal with the emerging problem.</li> <li>● Implement an integrated pest management plan.</li> <li>● Discuss the role of pesticides in an IPM program.</li> </ul>	PS.03.03.01.c. PS.03.03.02.a. PS.03.03.03.c. PS.03.03.04.b RST.11-12.3. WHST 11-12.4

<b>Unit 3</b>	Soil and Soil Fertility
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. How do essential nutrients affect soil and plants?</li> <li>2. How is fertilizer properly used?</li> </ol>

**Priority Standards Assessed in Learning**

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.01.03.01.a. Describe the role of N, P, and K in regards to vegetative growth, root development, seed production, and plant stress.</p> <p>PS.01.04.01.c. Monitor plants for signs of nutrient deficiencies and prepare a scouting report to correct elements negatively affecting plant growth in a field or greenhouse.</p>
<b>Common Core State Standards</b>	<p>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.</p> <p>WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.</p>

**Supporting Standards**

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.01.02.01.c. Formulate and prepare growing media for specific plants or crops.</p> <p>PS.01.04.04.b. Calculate the amount of fertilizer to be applied based on nutrient recommendation and fertilizer analysis.</p> <p>PS.01.02.03.b. Discuss how soil drainage and water-holding capacity can be improved.</p>
<b>Common Core State Standards</b>	<p>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.</p> <p>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.</p>

Objectives	Activities	CT AFNR, NGSS, CCSS
Determine how the seventeen essential elements affect plants.	<ul style="list-style-type: none"> <li>● Compare qualities of fertilizers .</li> <li>● Define soil acidity and alkalinity in terms of pH.</li> <li>● Describe how essential elements affect plant growth.</li> <li>● Describe how essential elements affect plant functions.</li> <li>● Describe how essential nutrients become available in soil.</li> <li>● Identify the essential nutrients functions and symptoms of deficiency in plants.</li> <li>● Appropriately use fertilizer proportioner.</li> </ul>	PS.01.03.01.a PS.01.04.01.c. PS.01.04.04.b. SL. 11-12.4 SL 11-12.1 WHST 11-12.4. RST.11-12.4
Compare soil qualities based on plant needs	<ul style="list-style-type: none"> <li>● Define good soil structure and factors that promote it.</li> <li>● State how and why soils differ.</li> <li>● List of the components of soil.</li> <li>● Appropriately sample soil/media.</li> <li>● Analyze UCONN soil test results.</li> <li>● Read and interpret fertilizer application tables.</li> <li>● Determine the appropriate fertilizer application for a specific crop.</li> <li>● Interpret media and tissue test results for poinsettia crop .</li> <li>● Use information from fertilizer bags to determine the appropriate amount of concentrate to mix for specified situations.</li> </ul>	PS.01.02.01.c. PS.01.02.03.b SL. 11-12.4 SL 11-12.1. WHST 11-12.4 RST.11-12.4



<b>Unit 4</b>	Industries in Horticulture
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. What are the different industries in the horticulture field?</li> <li>2. What are the production techniques for each industry?</li> </ol>

**Priority Standards Assessed in Learning**

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.03.01.03.a. Summarize optimal conditions for asexual propagation and demonstrate techniques used to propagate plants by cuttings, division, separation, layering, budding and grafting.</p> <p>PS.03.01.02.a. Demonstrate sowing techniques for providing favorable conditions to meet the factors of seed germination</p> <p>CRP.03.02.01.a. Research and examine components in a personal financial management plan (e.g., income, expense, budgeting, savings, credit, etc.).</p>
<b>Common Core State Standards</b>	<p>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.</p> <p>WHST 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.</p> <p>MP.4. Model with mathematics.</p>

**Supporting Standards**

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<p>PS.05.01.01.c. Compare general maintenance and upkeep requirements for a variety of greenhouses in relation to the type of structure and associated systems. Create a checklist of prescribed maintenance, preventative maintenance, monitoring, and troubleshooting schedules for greenhouse facilities and equipment. Demonstrate the mechanical skills needed for the general maintenance and repair of greenhouses and associated systems (such as basic wiring, plumbing, and general construction).</p> <p>PS.03.04.01.b. Analyze the alignment of modern technologies used in production systems (e.g., precision agriculture, GE crops, etc.) with USDA sustainable practices criteria.</p> <p>PS.07.01.01.a. Explain the size and scope of the turf industry.</p> <p>PS.03.01.05.b. Compare and contrast the potential risks and advantages associated with genetically modified plants.</p>
<b>Common Core State Standards</b>	<p>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.</p>

MP.1. Make sense of problems and persevere in solving them.

Objectives	Activities	CT AFNR, NGSS, CCSS
<p>Explain the differences between products and services by each horticulture industry</p>	<ul style="list-style-type: none"> <li>● Describe how to properly maintain a landscape throughout all seasons.</li> <li>● Explain and demonstrate nursery production techniques.</li> <li>● Compare and describe different types of greenhouse structures.</li> <li>● Explain and demonstrate greenhouse production techniques.</li> <li>● Explain and describe the differences in fruit and nut production.</li> <li>● Identify different nursery types.</li> <li>● Determine wholesale cost of greenhouse crops.</li> <li>● Set appropriate retail prices for plant sales.</li> <li>● Develop a marketing plan for selling greenhouse crops.</li> <li>● GMOs and other current issues .</li> <li>● Create career posters for areas in the industry.</li> <li>● Field trips to local horticulture businesses.</li> <li>● Operate the school store.</li> </ul>	<p>PS.05.01.01.c.            PS.03.04.01.b.            PS.07.01.01.a            PS.03.01.05.b.            RST.11-12.3.            WHST 11-12.4            SL. 11-12.4            MP4.            MP1.</p>
<p>Utilize proper propagation techniques in the horticulture industry</p>	<ul style="list-style-type: none"> <li>● Demonstrate techniques of propagation by the use of cuttings, seeds, plugs, grafting, budding, and layering.</li> <li>● Describe the difference of sexual and asexual Reproduction.</li> <li>● Describe the process of mitosis and meiosis .</li> <li>● Identify different seed types and explain their use.</li> <li>● Recognize the contributions of Mendel to the science of genetics.</li> <li>● Discuss methods of plant improvement.</li> <li>● Select and use appropriate water breakers for crops.</li> <li>● Seeding               <ul style="list-style-type: none"> <li>○ Interpret seeding directions (light, dark, temperature).</li> <li>○ Use appropriate media.</li> </ul> </li> <li>● Vegetative Reproduction               <ul style="list-style-type: none"> <li>○ Take cuttings: leaf, stem, leaf bud.</li> <li>○ Air &amp; Ground layering.</li> </ul> </li> </ul>	<p>PS.03.01.03.a.            PS.03.01.02.a.            PS.03.01.05.b.            RST.11-12.3.            WHST 11-12.4            SL. 11-12.4</p>

Explain steps in operating a horticulture business	<ul style="list-style-type: none"> <li>● Create a business plan for an area in horticulture.</li> <li>● Plan and organize greenhouse and classroom for plant sales.</li> <li>● Design and put together a store window display following a theme.</li> <li>● Learn about technology in the greenhouses and school store.</li> <li>● Develop and use a greenhouse checklist.</li> </ul>	CRP.03.02.01.a. PS.05.01.01.c. RST.11-12.3. WHST 11-12.4 SL. 11-12.4

<b>Course Vocabulary:</b>				
Action threshold	Cultivar	Guttation	Monoecious	Propagation
Adventitious roots	Cuticle	Hybrid vigor	Monohybrid cross	Scarification
Apical meristem	Cytokinins	Imperfect flower	Nematode	Sterilization
Auxins	Dihybrid cross	Incomplete flower	Parthenocarpy	Stratification
Callus	Dioecious	Injector proportioner	Pasteurization	Tissue culture
Chlorosis	F1 hybrid	IPM	Perfect flower	Translocation
Clone	Genetic engineering	Lateral bud	Phenotype	Transpiration
Complete flower	Genetic modification	Lateral meristem	Photoperiodism	
Composite flower	Genotype	Meiosis	Phototropism	
Crown Gibberellins	Mitosis	Phytokinins		

<b>Assessments:</b>
Quizzes
Unit test
Class assignments
Plant propagation evaluations
Research paper

<b>Connections to College/Career Readiness:</b>
Uconn ECE College Credit (3 Credits)
Vegetable Production Certificate

<b>Resources/Materials:</b>
<u>Ornamental Horticulture: Science, Operations and Management</u> , Jack Ingles
<u>Horticulture Today</u> , Jodi Songer Riedel and Elizabeth Driscoll

Stock plants, seeds, growing media, flats and inserts  
Rooting hormone  
Grow lights  
Water-soluble and slow-release fertilizers  
Insect monitoring cards

<b>Course Title</b>	<b>Natural Resources Management</b>
<b>Agriculture Pathway</b>	Plant Systems
<b>Length of Course</b>	One semester
<b>Ledyard High School Vision of the Graduate</b>	<p>Demonstrate an ability to communicate information clearly and effectively through a variety of media, including written, oral, visual, musical, and/or video productions.</p> <p>Demonstrate an ability to solve problems of varying complexity across a variety of content areas.</p> <p>Demonstrate critical thinking skills to find solutions, support arguments, and overcome challenges in a variety of content area</p>
<b>Course Overview</b>	<p>Natural Resources Management gives students the opportunity to learn more about the history of wildlife management in America, specific habitat requirements of certain wildlife, and how to manage a habitat to provide the most resources for native species. We will further explore how outdoor recreation developed as an industry, partake in different recreational activities while practicing safety and learning about the proper equipment.</p>
<b>Units of Study</b>	<ol style="list-style-type: none"> <li>1. Wildlife Management</li> <li>2. Outdoor Recreation</li> </ol>

<b>Unit 1</b>	Wildlife Management
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. Why is it necessary to manage wildlife?</li> <li>2. How can all habitat requirements be provided for wildlife?</li> <li>3. How do wildlife populations fluctuate over time?</li> <li>4. How can I manage wildlife habitat?</li> <li>5. How can I best plan for wildlife management?</li> <li>6. What impact will the management of a particular property have on wildlife?</li> </ol>

### Priority Standards Assessed in Learning

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<ul style="list-style-type: none"> <li>● NRS.02.01.01.c. Evaluate the impact of laws associated with natural resources systems (e.g., mitigation, water regulations, carbon emissions, game limits, invasive species, etc.).</li> <li>● NRS.02.03.02.b. Examine and describe the relationship between current trends in natural resource systems and historical figures that played a prominent role in shaping how natural resources are viewed and used today.</li> <li>● NRS.01.01.02.b. Analyze the interdependence of organisms within an ecosystem (e.g., food webs, niches, impact of keystone species, etc.) and assess the dependence of organisms on nonliving components (climate, geography, energy flow, nutrient cycling, etc.).</li> <li>● NRS.01.02.04.b. Apply identification techniques to determine the species of wildlife or insect.</li> <li>● NRS.01.02.08.b. Apply procedures for conducting resource inventories and population studies.</li> </ul>
<b>Next Generation Science Standards</b>	
<b>Common Core State Standards</b>	<ul style="list-style-type: none"> <li>● WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience</li> <li>● 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.</li> <li>● 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.</li> </ul>

### Supporting Standards

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<ul style="list-style-type: none"> <li>● NRS.01.05.01.b. Analyze and summarize examples of stages of succession.</li> <li>● NRS.02.01.02.b. Analyze the specific purpose of agencies associated with natural resources systems.</li> <li>● NRS.01.01.01.b. Assess the characteristics of a natural resource to determine its classification.</li> <li>● NRS.01.04.02.b. Analyze how different classifications of ground and surface water affect ecosystem function.</li> <li>● NRS.01.04.04.b. Conduct water quality test on an aquatic habitat.</li> <li>● NRS.01.05.04.b. Analyze a plot of land in order to determine which soil management techniques would be most applicable.</li> </ul>
<b>Common Core State Standards</b>	<ul style="list-style-type: none"> <li>● 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.</li> </ul>

Learning Objectives	Activities	CT AFNR, NGSS, CCSS
Describe the history and purpose of wildlife management.	<ul style="list-style-type: none"> <li>● Research how human activities have impacted wildlife.</li> <li>● Reference legislation that has been passed to aid in wildlife conservation.</li> <li>● Create a timeline of the historic events that lead to wildlife management.</li> <li>● Identify federal, state and local agencies and private organizations involved in wildlife management and describe their role. <a href="#">USFWS USES</a></li> <li>● Meets with industry professionals.</li> <li>● Explain the sources of funding for wildlife and habitat enhancement in the US.</li> </ul>	WHST.11-12.4 RST.11-12.4 NRS.02.01.01.c. NRS.02.03.02.b. NRS.01.05.01.b. NRS.02.01.02.b.
Identify wildlife species and their specific habitat requirements.	<ul style="list-style-type: none"> <li>● Observe habitat elements in the field. <a href="#">Wetlands</a></li> <li>● Students research habitat elements required for a particular species and create a 3-D model depicting those requirements.</li> <li>● Identify different food webs and chains.</li> <li>● Identify native and non native wildlife species.</li> </ul>	WHST.11-12.4 RST.11-12.4 RST.11-12.3. NRS.02.01.01.c. NRS.01.01.02.b. NRS.01.01.01.b.
Describe the factors that influence wildlife population.	<ul style="list-style-type: none"> <li>● Research various population trends.</li> <li>● Model population dynamics with mathematical scenarios.</li> <li>● Talk with wildlife biologists that conduct population inventories.</li> </ul>	WHST.11-12.4 SL.11-12.4 NRS.01.01.02.b.

	<ul style="list-style-type: none"> <li>● Use telemetry equipment to triangulate and hone in on the location of a tracking collar.</li> <li>● Invite trappers, hunters and fishermen in to discuss their role in wildlife management.</li> <li>● Monitor species and/or habitats.</li> </ul>	NRS.01.02.04.b.
Identify wildlife management techniques.	<ul style="list-style-type: none"> <li>● Research management techniques beneficial to particular species.</li> <li>● Observe wildlife management techniques in the field.</li> <li>● Evaluate management techniques.</li> </ul>	WHST.11-12.4 RST.11-12.4 NRS.02.01.01.c. NRS.01.01.02.b. NRS.01.02.04.b. NRS.01.01.01.b. NRS.01.04.02.b.
Inventory and assess wildlife habitat.	<ul style="list-style-type: none"> <li>● Conduct a natural resource inventory.</li> <li>● Analyze data from natural resource inventory.</li> <li>● Suggest wildlife management strategies.</li> <li>● Identify plants (native and invasive), insects, weeds and wildlife.</li> </ul>	WHST.11-12.4 SL.11-12.4 RST.11-12.3. NRS.01.01.02.b. NRS.01.02.04.b. NRS.01.02.08.b. NRS.01.01.01.b. NRS.01.04.04.b. NRS.01.05.04.b.
Manage wildlife habitat.	<ul style="list-style-type: none"> <li>● Implement wildlife management practices suitable to Connecticut wildlife.</li> <li>● Observe and assess impact of wildlife management practices implemented.</li> </ul>	WHST.11-12.4 SL.11-12.4 RST.11-12.3. NRS.01.01.02.b. NRS.01.02.04.b. NRS.01.02.08.b. NRS.01.04.04.b. NRS.01.05.04.b.



<b>Unit 2</b>	Outdoor Recreation
<b>Essential Questions</b>	<ol style="list-style-type: none"> <li>1. How do people utilize outdoor recreation opportunities?</li> <li>2. How can I benefit from outdoor recreation opportunities?</li> <li>3. How can I ensure safety for myself and the group when participating in outdoor recreation activities?</li> <li>4. How can I minimize my impact on the environment by practicing Leave No Trace principles?</li> </ol>

**Priority Standards Assessed in Learning**

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<ul style="list-style-type: none"> <li>● NRS.02.01.01.c. Evaluate the impact of laws associated with natural resources systems (e.g., mitigation, water regulations, carbon emissions, game limits, invasive species, etc.).</li> <li>● NRS.02.01.02.b. Analyze the specific purpose of agencies associated with natural resources systems.</li> <li>● NRS.0.05.01.b. Demonstrate the proper use for the following tools in natural resources: GPS unit, diameter tape, telemetry unit, seines, aquatic net, water meter, animal tag or band, Biltmore stick, Secchi disk, analog refractometer, and hydrometer.</li> <li>● NRS.0.05.02.c. Demonstrate the safe use of tools, materials and equipment for use in natural resources.</li> <li>● NRS.04.01.06.c. Evaluate the impact of recreational activities on natural resources and create an improvement plan.</li> <li>● NRS.04.03.03.a. Research and summarize strategies and benefits of preventing the introduction of harmful species to a particular region.</li> </ul>
<b>Common Core State Standards</b>	<ul style="list-style-type: none"> <li>● WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience</li> <li>● 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.</li> <li>● 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.</li> </ul>

**Supporting Standards**

<b>Connecticut Agriculture, Food, and Natural Resources Standards</b>	<ul style="list-style-type: none"> <li>● NRS.02.02.01.b. Assess and explain how different kinds of human activity affect the use and availability of natural resources (i.e., agriculture, industry, transportation, etc.).</li> <li>● NRS.02.04.02.a. Research the impact of the use of natural resources on local, state and national economies (e.g., outdoor recreation, energy production, preservation, etc.).</li> <li>● NRS.03.01.07.b. Assess different options for improving the sustainability of outdoor recreation based on its impact on natural resources and likelihood of acceptance.</li> </ul>
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	<ul style="list-style-type: none"> <li>• NRS.02.04.02.a. Research the impact of the use of natural resources on local, state and national economies (e.g., outdoor recreation, energy production, preservation, etc.).</li> </ul>
<b>Common Core State Standards</b>	<ul style="list-style-type: none"> <li>• 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.</li> </ul>

<b>Objectives</b>	<b>Activities</b>	<b>CT AFNR, NGSS, CCSS</b>
Discuss the history of outdoor recreation in the United states.	<ul style="list-style-type: none"> <li>• Discuss the history of outdoor recreation.</li> <li>• Identify different <a href="#">state</a> and federal <a href="#">agencies</a>.</li> </ul>	NRS.02.01.01.c. NRS.02.01.02.b. RST.11-12.4 SL.11-12.4 WHST.11-12.4
Identify and participate in opportunities for outdoor recreation in New England.	<ul style="list-style-type: none"> <li>• List and discuss specific outdoor recreational opportunities in both local settings and throughout New England.</li> <li>• Provide opportunities which could allow for students to obtain certificates (ie CT DEEP Safe Boating Course, Fishing license, etc.).</li> <li>• Participate in outdoor recreation opportunities such as <a href="#">hiking</a>, geocaching, boating, etc.</li> <li>• Operate a compass and determine a student's pace.</li> <li>• Learn how to read a topographic map.</li> <li>• Utilize GPS units and utilis GIS.</li> <li>• Interpret basic map symbols, plan a route and navigate accurately on and off trail using a topographic map.</li> </ul>	NRS.02.02.01.b. NRS.0.05.01.b. NRS.0.05.02.c. RST.11-12.3. RST.11-12.4 SL.11-12.4 WHST.11-12.4
Practice safety in outdoor recreation activities.	<ul style="list-style-type: none"> <li>• Invite medical professionals in to teach First Aid and/or CPR.</li> <li>• Speak with staff from an outdoor recreation company about specific safety procedures.</li> <li>• Speak with a law enforcement official to discuss recommended safety precautions in recreational activities.</li> <li>• Practice safety in the field while participating in outdoor recreation activities.</li> </ul>	NRS.02.02.01.b. NRS.0.05.01.b. NRS.0.05.02.c. NRS.03.01.07.b. NRS.04.01.06.c. RST.11-12.3. SL.11-12.4

	<ul style="list-style-type: none"> <li>• Work with students to utilize resources to live off the land, survival day.</li> </ul>	
Identify principles of Leave No Trace.	<ul style="list-style-type: none"> <li>• As a class, plan and conduct an outing that incorporates all LNT principles. <a href="#">Leave No Trace NPS</a></li> <li>• Practice in recreational activities LNT principles</li> </ul>	<p>NRS.0.05.02.c.  NRS.04.01.06.c.  NRS.04.03.03.a.  NRS.02.04.02.a.  RST.11-12.3.  RST.11-12.4  SL.11-12.4</p>

<p><b>Course Vocabulary:</b></p> <p>Adaptive management  Adventure education  Adventure therapy  Archery  Banding  Basal cover  Big game  Biodiversity  Biological diversity  Biological resources  Biomass  Blaze  Browse  Buffer  Captive breeding  Captive wildlife  Carrying capacity  Catch and release</p>	<p>Census  Commercial  Correlation  Corridor  Critical habitat  DEET  Demography  Disease vector  Dispersal  Economic value  Endangered species  Endemic species  Eradication  Fertility  Firearms  Flock  Food plot  Forage  Fragmentation  Game  Gamebirds</p>	<p>Genetic diversity  Habitat diversity  Habitat loss  Hatchery  Head lamp  Herd  Hibernation  Human-wildlife conflict  Hunting  Hyperthermia  Hypothermia  Illegal trade  Layers  Leave No Trace  Leisure  Mating season  Migration  Migratory species  Mortality rate  Native species  Natural history</p>	<p>Nutrition  Noise pollution  Off road vehicles  Outdoor recreation  Pittman-Robertson Act  Poaching  Radio collar  Range  Restoration  Small game  Species diversity  Sport fish  Sustainable use  Synthetic  Tagging  Telemetry  Territory  Terrain  Tred  Trespassing  Water filter  Water proof  Water resistant</p>
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**Assessments:**

Quizzes  
Unit test  
Class assignments  
Field Work  
Field Notebook

**Connections to College/Career Readiness:**

DEEP  
Ecology Conservation & Management Certification

**Resources/Materials:**

Compass  
Binoculars  
Wildlife Identification cards  
Canoes  
Topography maps  
Boating safety equipment  
First aid equipment  
Spotting scope  
Natural Resources System, Travis park and Tara Berescik  
[Leave No Trace](#)  
[UFSWF](#)  
[USFS](#)  
ICEV