

AGRI-SCIENCE IV

Horticulture

Overview

Agri-Science IV students will focus on those areas of interest they have developed over the previous three years and concentrate on developing skills more specific to those areas of interest. All Agri-Science curricula are aligned with the national Agriculture, Food, and Natural Resources (AFNR) standards.

Agribusiness Systems (ABS) —the study of business principles, including management, marketing and finance, and their application to enterprises engaged in Agriculture, Food and Natural Resources

Agricultural Mechanics/Power, Structural and Technical Systems (PST)—the study of agricultural equipment, power systems, alternative fuel sources and precision technology, as well as woodworking, metalworking, welding and project planning for agricultural structures

Animal Science/Animal Systems (AS)—the study of animal systems, including life processes, health, nutrition, genetics, management and processing, through the study of small animals, aquaculture, livestock, dairy, horses and/or poultry

Environmental Service Systems (ESS)—the study of systems, instruments and technology used in waste management and their influence on the environment

Food Products and Processing Systems (FPP)—the study of product development, quality assurance, food safety, production, sales and service, regulation and compliance, and food service within the food science industry

Natural Resource Systems (NRS)—the study of the management of soil, water, wildlife, forests and air as natural resources

Horticulture/Plant Systems (PS)—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 and shrubs and/or ornamental plants

Students are expected to complete the specific course of study related to their career interests and goals that they began in Agri-Science II that will define students as “completers”. An Agri-Science completer is an Agri-Science IV student who has successfully completed three or four years of study in agriculture, math, and English. Course selection is developed with the assistance of the SAE advisors and classroom teachers.

Agri-Science IV students will continue to have opportunities to further develop leadership skills through participation in the FFA. Students at this stage are encouraged to participate in FFA Career Development Events (CDEs) in order to further develop skills. Although participation in Agri-Science is limited to those who complete applications, when space allows, ECE classes may be open to other juniors and seniors within Ledyard High School. Course enrollment opportunities by other LHS students will change from year to year based on space availability. Interested students should contact the Agri-Science Instructional Leader or their School Counselor for further information.

Agri-Science IV Horticulture students will further develop abilities and competencies relative to plant related careers whereby the student receives not only theory but actual practice in “how a plant grows” and “how to grow plants.” Students have the opportunity to study in depth greenhouse management, botany, and floral design. There will be ample opportunities for practical work where students will apply classroom instruction to real-world situations in the lab, greenhouse and gardens.

The culmination of Agri-Science IV is the Senior Projects unit. All Agri-Science IV students will have the opportunity to research, design, and conduct an independent project. For those students in Levels 1 & 2 there exists an option to take a more traditional unit in Agricultural Products.

ECE courses are taught concurrently with Agri-Science IV horticulture classes. Those students who have taken the introductory UCONN floral design class in Agri-Science III may also take UCONN Advanced Floral Art in Agri-Science IV. In addition, students are encouraged to take the UCONN Fundamentals of Horticulture course. Students enrolled in the UCONN courses follow the same course rotation as those students who are following the horticulture track however, assignments and rigor may differ. Students who wish to enroll as ECE students must do so during the registration period in the spring prior to the start of the school year.

| Units Levels 1 & 2 |
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| Fundamentals of Horticulture |
| Floral Design |
| Advanced Floral Design or Ag Research Projects |
| Senior Projects or Agricultural Products |

| Units ECE Students |
|---|
| Fundamentals of Horticulture (ECE) |
| Floral Design (Advanced Holiday Design) |
| Advanced Floral Design (ECE) |
| Senior Projects |

Title: Agri-Science IV Supervised Agricultural Experience (SAE)

Unit Overview: SAE is a vital aspect of agricultural education. As part of Agri-Science I & II students have explored their options and developed work experience programs suitable for young students exploring agriculture as a career. Students have learned how to keep records and the best methods for documenting their day to day work as well as their progress. By the end of Agri-Science III students have developed and implemented plans for supervised work experience relating to their interests and career goals and have shown growth over the previous years.

Agri-Science IV students are expected to continue to demonstrate increased responsibility and new learning relative to their SAEs. Through advanced SAE work, students may be more involved in starting and operating their own businesses or taking employment in agriculturally-related enterprises. It is strongly recommended that students apply for local and state FFA proficiency awards as well as the FFA State Degree.

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).

Suggested Time: On-going

Ledyard High School Expectations for Student Learning:

- Read and write critically and effectively for a variety of purposes
- Speak clearly and communicate ideas accurately in a variety of settings
- Demonstrate critical thinking skills

Agriculture, Food, and Natural Resources Standards:

- CS.01.01.07.c** Evaluate actions taken and make appropriate modifications to personal goals.
- CS.01.03.02.c.** Create a plan of action to complete a task based on a conceptualized idea.
- CS.01.06.03.c** Use problem solving strategies to solve a professional or personal issue.
- CS.01.06.05.c** Implement a plan to develop new knowledge and skills related to professional and personal aspirations
- CS.02.03.03.c.** Demonstrate employability skills for a specific career.
- CS.03.01.01.b.** Select the appropriate form of technical and business writing or communication for a specific situation.
- CS.03.02.03.b.** Practice ethical behaviors.
- CS.07.04.01.c.** Apply general workplace safety precautions/procedures.
- CS.08.01.01.c.** Use tools and equipment appropriately to complete a specific task.
- ABS.03.01.01.a** Maintain production and agri-business records.

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.11-12.1.e** Provide a concluding statement or section that follows from or supports the argument presented.
- WHST.11-12.2a** Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- WHST.11-12.4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

MP 6 Attend to precision

| Objectives | Required Activities/ Suggested Activities | AFNR Standards/CCSS |
|---|--|---|
| Implement planned improvements to enhance or improve work experience program | <ul style="list-style-type: none"> • Develop and expand work experience activities/projects in line with career goals • Write SMART goals for SAE improvement over the year | CS.01.01.07.c CS.01.03.02.c CS.01.06.03.c CS.01.06.05.c CS.02.03.03.c. ABS.03.01.01.a RST.11-12.4 WHST.11-12.4 |
| Accurately (or independently) complete appropriate work experience forms utilizing AFNR standards | <ul style="list-style-type: none"> • Identify key skills necessary to complete the Structured Work-Based Learning Form using AFNR standards • Complete appropriate CT Departments of Labor and Education forms for student work experience independently | CS.01.06.05.c CS.02.03.03.b. CS.03.01.01.b. WHST.9-10.4 |
| Demonstrate effective and appropriate work skills | <ul style="list-style-type: none"> • Work safely and effectively • Document safe handling of equipment, plants, and animals • Demonstrate appropriate workplace skills such as time management, interpersonal skills, organization, communication, technology and tool use, and problem solving | CS.01.06.03.c CS.02.03.03.c. CS.01.06.05.c CS.03.02.03.b. CS.07.04.01.c. CS.08.01.01.c. ABS.03.01.01.a RST.11-12.4 WHST.11-12.4 |

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| Develop and maintain clear records | <ul style="list-style-type: none"> • Document time spent in activities, skills learned, income, and expenses • Keep all SAE records in a well-organized binder • Provide evidence of work using photographs, videos, and journals • Meet with SAE advisor weekly during the school year and at least once during the summer • Set up/organize appointments with SAE advisor and employer/supervisor/parent | CS.02.03.03.c. CS.03.01.01.b. ABS.03.01.01.a RST.11-12.4 WHST.11-12.1.e WHST.11-12.2a WHST.11-12.4 |
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Italicized items indicate technology use

SAE Use Vocabulary:

501(c)(3)

Entrepreneurship

Hazardous Occupations

Liability

Non-Profit Entity

Paid Placement

Structured Work-Based Learning Plan

Worker's Compensation Insurance

Work-site Mentor

Assessments:

- Weekly record checks
- Monthly and annual summaries
- On-site visits by advisor in coordination with parent/supervisor/employer
- SAE rubrics

Resources/Materials:

- AFNR Standards
- Binder and record sheets
- SDE/SDOL employment forms

Title: Fundamentals of Horticulture/ECE Fundamentals of Horticulture

Unit Overview: Students enrolled in Fundamentals of Horticulture will continue to learn about the science and practice of working with plants. Students will review basic concepts of plant anatomy and physiology and will also have the opportunity to learn about and practice plant propagation, greenhouse crop culture, pest management, and marketing. In addition, students will explore current issues in horticulture such as environmental concerns related to horticultural practices and genetic engineering. This class will follow a syllabus approved by the Plant Science Department at the University of Connecticut. Agri-Science students have the option of taking the class for college credit or as an Agri-Science IV unit.

Suggested Time: One quarter

Ledyard High School Expectations for Student Learning:

- Read and write critically and effectively for a variety of purposes
- Speak clearly and communicate ideas accurately in a variety of settings
- Demonstrate critical thinking skills

Agriculture, Food, and Natural Resources Standards:

- CS.02.04.01.c** Demonstrate critical and creative thinking skills while completing a task
- CS.02.04.02.c** Implement effective problem solving strategies
- CS.07.04.01.c** Apply general workplace safety precautions/procedures.
- CS.08.01.01.c** Use tools and equipment appropriately to complete a specific task
- ABS.05.01.02.a** Name and explain the impact of external economic factors on an AFN business
- PS.01.02.01.c** Apply the knowledge of cell differentiation and the functions of the major types of cells to plant systems
- PS.01.02.02.c** Relate the active and passive transport of minerals into and through the root system to plant nutrition
- PS.01.02.05.c** Apply the knowledge of flower structures to plant breeding, production and use.
- PS.01.03.01.c** Explain the light-dependent and light-independent reactions that occur during photosynthesis and apply the knowledge to plant management
- PS.01.03.03.b** Explain the process of secondary plant growth
- PS.02.01.01.c** Evaluate plant responses to varied light color, intensity and duration
- PS.02.02.01.b** Describe the physical characteristics of growing media and explain the influence they have on plant growth
- PS.02.03.02.a** Discuss the influence of pH and cation exchange capacity on the availability of nutrients
- PS.02.03.04.c** Use variable-rate technology to apply fertilizers to meet crop nutrient needs
- PS.03.01.01.b** Diagram the process of plant fertilization
- PS.03.01.03.c** Evaluate asexual propagation practices based on productivity and efficiency
- PS.03.01.05.b** Give examples of the risks and advantages associated with genetically modified plants
- PS.03.02.01.c** Produce pest- and disease-free propagation material
- PS.03.02.04.c** Prepare and implement a plant production schedule based on predicted environmental conditions

- PS.03.03.01.c** Design and implement a crop scouting program
- PS.03.03.03.b** Describe types of pesticide controls and formulations
- PS.03.03.04.a** Explain the risks and benefits associated with the materials and methods used in plant pest management
- PS.03.04.01.b** Describe sustainable agriculture practices and compare the ecological effects of traditional agricultural practices with those of sustainable agriculture

Common Core State Standards

- RST.11-12.4** Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text
- RST.11-12.8** Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
- WHST. 11-12.1e.** Provide a concluding statement or section that follows from or supports the argument presented.
- 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 6** Attend to precision

| Objectives | Required Activities/ Suggested Activities | AFNR Standards/CCSS |
|--|---|--|
| Apply knowledge of plant systems to plant culture in the greenhouse and in the field | <ul style="list-style-type: none"> • Identify key anatomical features of plants and describe the function of those parts • Determine how plant functions affect plant growth • Dissect and compare reproductive structures in a variety of flowers • <i>Adjust greenhouse controls</i> to create a suitable environment in order to promote optimal plant growth in the greenhouse • Implement sustainable cultural practices in the greenhouse • Research a current topic in horticulture and write a paper detailing the application to the horticulture industry | CS.02.04.01.c CS.02.04.02.c CS.08.01.01.c ABS.05.01.02.a PS.01.02.01.c PS.01.02.02.c PS.01.02.05.c PS.01.03.01.c PS.01.03.03.b PS.02.01.01.c PS.02.03.02.a PS.03.01.05.b PS.03.04.01.b RST.11-12.4 RST.11-12.8 WHST. 11-12.1e WHST. 11-12.4. |

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| <p>Apply knowledge of soils and nutrients to greenhouse and field culture of crops</p> | <ul style="list-style-type: none"> • Describe how essential elements in soil affect plant growth • Compare qualities of various types of fertilizers • Develop a plan to promote optimal plant growth with appropriate application of nutrients • Explain how nutrients in the soil move into plants | <p>CS.02.04.01.c CS.02.04.02.c CS.08.01.01.c ABS.05.01.02.a PS.01.02.01.c PS.01.02.02.c PS.02.03.02.a PS.02.03.04.c PS.03.01.01.b RST.11-12.4 RST.11-12.8 WHST. 11-12.1e WHST. 11-12.4.</p> |
| <p>Identify the role plant hormones play in growth and reproduction of plants</p> | <ul style="list-style-type: none"> • Identify the three key naturally occurring plant growth regulators and explain the function of each • Test synthetic growth regulators on seeds and established plants to identify the roles growth regulators play in commercial crop production | <p>CS.02.04.01.c CS.02.04.02.c CS.07.04.01.c PS.01.03.03.b PS.03.01.03.c RST.11-12.4 WHST. 11-12.1e WHST. 11-12.4.</p> |
| <p>Propagate plants successfully</p> | <ul style="list-style-type: none"> • Identify the process of plant reproduction • Predict the occurrence of physical characteristics in F₁ & F₂ generations • Discuss in writing the importance of mutations in commercial plant production • Propagate stock plants using cuttings, layering, crown division, grafting, and tissue culture • Read seed packages to determine the most effective means of germinating seeds to produce a commercial crop • Evaluate the role of genetic modification in the horticulture industry | <p>CS.02.04.01.c CS.02.04.02.c CS.07.04.01.c CS.08.01.01.c ABS.05.01.02.a PS.01.02.01.c PS.01.02.05.c PS.01.03.01.c PS.01.03.03.b PS.02.01.01.c PS.03.01.03.c PS.03.01.05.b PS.03.02.01.c RST.11-12.4 RST.11-12.8</p> |

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| | | WHST. 11-12.1e WHST. 11-12.4. |
| Identify common plant pests and diseases | <ul style="list-style-type: none"> Identify common greenhouse and garden pests and determine acceptable population limits Monitor greenhouse crops for pests Develop a pest and disease management protocol for the greenhouse Discuss the role of pesticides in an IPM program | PS.03.02.04.c PS.03.03.03.b PS.03.03.04.a PS.03.03.03.b PS.03.04.01.b RST.11-12.4 RST.11-12.8 WHST. 11-12.1e WHST. 11-12.4. MP 4 MP 6 |

Level 1

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| Apply knowledge of soils and nutrients to greenhouse and field culture of crops | <ul style="list-style-type: none"> Compare various types of growing media and determine the best use for each Calculate the appropriate dosage of water-soluble fertilizer and adjust the injector proportioner to apply correct amounts of nutrients to a specific greenhouse crop | PS.02.02.01.b PS.02.03.04.c RST.11-12.4 RST.11-12.8 WHST. 11-12.1e WHST. 11-12.4. MP 4 MP 6 |
| Propagate plants successfully | <ul style="list-style-type: none"> Compare the progress of cuttings grown with and without an artificial light source Evaluate the value of using light to propagate plants | PS.02.01.01.c PS.03.01.03.c WHST. 11-12.1e WHST. 11-12.4. |

ECE Students

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| Apply knowledge of plant systems to plant culture in the greenhouse and in the field | <ul style="list-style-type: none"> Create a time-table to produce a marketable crop for optimal sales | CS.02.04.01.c CS.02.04.02.c CS.08.01.01.c PS.01.02.01.c PS.01.03.01.c PS.03.02.04.c WHST. 11-12.1e WHST. 11-12.4. |
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| Propagate plants successfully | <ul style="list-style-type: none"> Evaluate the influence of artificial lighting on plant propagation and make suggestions for lighting use in the greenhouse to produce crops | PS.02.01.01.c PS.03.01.03.c RST.11-12.4 WHST. 11-12.1e WHST. 11-12.4. |
| Identify common plant pests and diseases | <ul style="list-style-type: none"> Identify the action threshold for pests in the greenhouse and determine an appropriate course of action to deal with the emerging problem | CS.02.04.01.c CS.02.04.02.c MP 4 MP 6 |

Italicized items indicate technology use

Assessed Vocabulary:

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|--------------------|----------------------|-------------------|----------------|
| Action threshold | Cultivar | Imperfect flower | Photoperiodism |
| Adventitious roots | Cuticle | Incomplete flower | Phototropism |
| Apical meristem | Cytokinins | IPM | Scarification |
| Auxins | Dihybrid cross | Meiosis | Stratification |
| Clone | F1 hybrid | Mitosis | Tissue culture |
| Complete flower | Genetic engineering | Monoecious | Translocation |
| Composite flower | Genetic modification | Monohybrid cross | Transpiration |
| Crown | Gibberellins | Perfect flower | |

Classroom Use Vocabulary:

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|-----------|-----------------------|------------------|---------------|
| Callus | Guttation | Lateral meristem | Phenotype |
| Chlorosis | Hybrid vigor | Nematode | Phytokinins |
| Dioecious | Injector proportioner | Parthenocarp | Propagation |
| Genotype | Lateral bud | Pasteurization | Sterilization |

Assessments:

- Quizzes
- Unit test
- Class assignments
- Plant propagation evaluations
- Research paper

Resources/Materials:

- Text: Ornamental Horticulture: Science, Operations, and Management, Ingels
- Stock plants, seeds, growing media, flats and inserts
- Rooting hormone
- Gibberellic acid
- Grow lights
- Water-soluble and slow-release fertilizers
- Insect monitoring cards

UCONN Course Syllabus
UCONN Fundamentals of Horticulture (HORT 1110-802)
Ledyard High School - Agri-Science IV Horticulture
Semester 1

Course Description:

Science and practice of horticultural plant propagation and culture. Basic concepts of plant structure, growth and function. Integrated pest management. Impact of new technology. Horticulture and the environment.

Grading Scale

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| A | 93 – 100 |
| A- | 90 – 92 |
| B+ | 87 – 89 |
| B | 83 – 86 |
| B- | 80 – 82 |
| C+ | 77 – 79 |
| C | 73 – 76 |
| C- | 70 – 72 |
| D+ | 67 – 69 |
| D | 63 – 66 |
| D- | 60 – 62 |
| F | > 60 |

Note that grades of C- and below will not be eligible for UCONN credit.

Text: Ornamental Horticulture: Science, Operations, and Management, Jack Ingels

Tentative Schedule

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| Week 1: | Plant structure, growth & function Chapter 1 (<i>reading and assignment should have been completed prior to the start of school</i>) |
| Week 2: | Soils & soil fertility Chapter 2 (<i>reading and assignment should have been completed prior to the start of school</i>) |
| Week 3: | Plant Propagation Chapters 5 & 14: Plant Reproduction |
| Week 4: | Pests and pest management Chapters 4, 6: Plant growth regulators |

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| Week 5 | Indoor and container horticulture Chapters 19, 20: Growing structures & production techniques |
| Week 6 | Environmental horticulture Chapters 11, 13: lawns & landscapes |
| Week 7 | Fruit, vegetable and herb production and marketing Supplemental resources |
| Week 8 | Horticulture and humanity Supplemental resources: The floriculture industry |
| Week 9 | Human relations and career success Chapter 18: In the horticulture industry Unit Test |

Assessments:

Quizzes (50 points each)

Unit Test (100 points)

Term Project/Paper (250 points)

Window Design (100 points)

Class Assignments, Practical Work, and Labs (400)

Assignments and Lab Activities:

- Greenhouse Management
 - Develop and use greenhouse check list
 - Select and use appropriate water breakers for crop
 - Maintain proper greenhouse sanitation
 - Appropriately use fertilizer proportioner
- Plant Propagation
 - Seeding
 - Interpret seeding directions (light, dark, temperature)
 - Use appropriate media
 - Vegetative Reproduction
 - Take cuttings: leaf, stem, leaf bud
 - Air & Ground layering

- Soil Fertility
 - Appropriately sample soil/media
 - Analyze UCONN soil test results
 - Read and interpret fertilizer container information
 - Determine the appropriate fertilizer application for a specific crop
 - Interpret media and tissue test results for poinsettia crop
 - Use information from fertilizer bags to determine the appropriate amount of concentrate to mix for specified situations
- Marketing
 - Plan and organize greenhouse and classroom for plant sales
 - Design and construct a store window display following a theme
- Greenhouse Pests
 - Identify common greenhouse pests
 - Determine pest activity using monitoring cards
 - Identify means of biological control in greenhouse
 - Determine wholesale cost of greenhouse crops
 - Set appropriate retail prices for plant sales
 - Develop a marketing plan for selling greenhouse crops

Requirements for submitting written work:

In many cases assignments will be submitted in class but in some cases (e.g. class project) your work will be submitted through www.turnitin.com other assignments will be submitted to your digital portfolio.

Useful websites:

<http://www.ladybug.uconn.edu/gardening/horticulture.html>

<http://www.hort.uconn.edu/lpm/>

<http://www.soiltest.uconn.edu/factsheet.php>

<http://www.sustainability.uconn.edu/>

<http://www.greenhouse.cornell.edu/index.html>

<http://ars.usda.gov/is/AR/>

All students are expected to adhere to the plagiarism policy for LHS. If necessary, review the policy on the school website:

<http://www.ledyard.net/lhs/academics/plagiarism.html>

Title: Advanced Holiday Design

Unit Overview: Advanced Holiday Design provides students with a more rigorous application of floral design principles within the context of fall and winter holidays. Students will build on skills learned in previous classes and will apply those skills to specific designs for holidays and holiday events. Students will be expected to create arrangements from their own designs rather than rely on instructor models. Planning for personal as well as event flowers becomes a more critical part of this unit as students learn to prepare flower orders for their designs.

Suggested Time: One quarter

Ledyard High School Expectations for Student Learning:

- Read and write critically and effectively for a variety of purposes
- Speak clearly and communicate ideas accurately in a variety of settings
- Demonstrate critical thinking skills

Agriculture, Food, and Natural Resources Standards:

- CS.01.01.02.c** Assess outcomes to determine success for a task
- CS.01.01.06.a** Identify the strengths/talents of team members needed to achieve a desired task
- CS.02.04.01.c** Demonstrate critical and creative thinking skills while completing a task
- CS.02.04.02.c** Implement effective problem solving strategies
- CS.03.01.03.c** Make effective business presentations
- CS.06.02.01.a** Use proper safety practices/personal protective equipment
- CS.07.04.01.c** Apply general workplace safety precautions/procedures.
- CS.08.01.01.c** Use tools and equipment appropriately to complete a specific task
- ABS.05.01.02.a** Name and explain the impact of external economic factors on an AFN business
- ABS.05.01.04.a** Calculate percentages, ratios, and related business applications
- PS.01.01.02.c** Identify agriculturally important plants by scientific names
- PS.01.02.05.c** Apply the knowledge of flower structures to plant breeding, production and use.
- PS.03.05.03.b** Explain the proper conditions to maintain the quality of plants and plant products held in storage.
- PS.03.05.04.b** Demonstrate techniques for grading, handling, and packaging plants and plant products for distribution
- PS.04.01.01.c** Select plants, hard goods, supplies and other materials for use in a design based on a range of criteria.
- PS.04.01.02.c** Create and implement designs by following established principles of art

Common Core State Standards

- RST.11-12.4** Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text
- RST.11-12.8** Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
- WHST. 11-12.1e** Provide a concluding statement or section that follows from or supports the argument presented.
- 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.

- MP 2** Reason abstractly and quantitatively
- MP 3** Construct viable arguments and critique the reasoning of others
- MP 4** Model with mathematics
- MP 6** Attend to precision

| Objectives | Required Activities/ Suggested Activities | AFNR Standards/CCSS |
|---|---|--|
| Identify and use color harmonies effectively with respect to specific holidays | <ul style="list-style-type: none"> • Select appropriate floral materials using color theory • Apply color theory to both individual designs as well as event plans | CS.02.04.01.c PS.04.01.01.c PS.04.01.02.c RST.11-12.4 |
| Identify various fall and winter holidays and develop designs appropriate to those holidays | <ul style="list-style-type: none"> • Identify traditional holidays and typical design styles used for those holidays • Create plans for traditional holiday designs • Develop alternatives to traditional styles and colors in holiday designs | PS.01.01.02.b PS.04.01.02.c RST.11-12.4 WHST. 11-12.1e SL.11.-12.4 |
| Implement practices to select, process, and extend the life of holiday greens | <ul style="list-style-type: none"> • Identify, select and harvest appropriate greens from local trees and shrubs • Condition and store holiday greens appropriately • Identify those signs that indicate materials are losing vigor | PS.03.05.04.b PS.01.02.05.c PS.03.05.03.b RST.11-12.8 WHST. 11-12.1e WHST. 11-12.4. MP 2 MP 4 |

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|---|--|---|
| <p>Use seasonally appropriate floral materials to create designs appropriate to a given holiday/event</p> | <ul style="list-style-type: none"> • Sketch plans for arrangements and create flower orders • Adapt plans to use available greens and flowers • Select appropriate materials based on size, color, and use in designs • Individualize arrangements by selecting appropriate floral materials and accents • Create a series of designs that follow a color or design theme appropriate to a holiday season | <p>CS.03.01.03.c CS.02.04.01.c CS.02.04.02.c CS.06.02.01.a CS.08.01.01.c PS.01.01.02.b PS.01.02.05.c PS.03.05.04.b PS.04.01.01.c PS.04.01.02.b</p> |
| <p>Develop sketches and plans for specific designs and event flowers</p> | <ul style="list-style-type: none"> • Make practice sketches and plant lists using existing floral arrangements • Create a sketches for proposed designs for single arrangements or events • Evaluate sketches as useful tools for constructing designs • Interview a potential “client” to determine their needs and interests and create a design to fulfill those requirements | <p>CS.03.01.03.c CS.02.04.01.c CS.02.04.02.c CS.06.02.01.a CS.08.01.01.c PS.01.01.02.b PS.01.02.05.c PS.04.01.01.c PS.04.01.02.c SL.11.-12.4</p> |
| <p>Evaluate floral arrangements using design rubrics</p> | <ul style="list-style-type: none"> • Identify aspects of floral design standards in an exemplar • Use floral design rubrics to evaluate arrangements • Implement design principles when creating or modifying an arrangement • Assess arrangements and in writing indicate how each arrangement meets each design principle. • Create a design portfolio of all arrangements constructed and evaluate each for application of principles, potential use, marketing, and provide suggestions for improvement | <p>CS.01.01.02.c CS.01.01.06.a CS.02.04.01.c CS.02.04.02.c PS.01.01.02.b PS.01.02.05.c PS.04.01.02.c RST.11-12.4 WHST. 11-12.1e SL.11.-12.4 MP 4 MP6</p> |
| <p>Determine economic value of raw materials and finished products</p> | <ul style="list-style-type: none"> • Explain factors that affect wholesale costs and retail pricing of floral designs particularly for those associated with special events • Determine the amount and types of materials used in an | <p>CS.02.04.02.c ABS.05.01.02.a ABS.05.01.04.a</p> |

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|---------------------------|--|--|
| | arrangement and calculate the wholesale cost and an appropriate retail price | PS.01.02.05.c MP 4 MP 6 |
| Create a design portfolio | <ul style="list-style-type: none"> Chronicle floral design work in a portfolio including photographs, materials lists, wholesale costs, retail prices, and an evaluation of the arrangement with respect to design principles | CS.01.01.02.c CS.02.04.01.c RST.11-12.4 WHST. 11-12.1e. |

Level 1

| | | |
|--|---|---|
| Use available floral materials to plan and create floral arrangements adapting design principles to non-traditional pieces | <ul style="list-style-type: none"> Adapt a floral design using different flowers/materials Develop alternative plans for a given arrangement indicating how that arrangement can be adapted to meet a lower price point | PS.01.02.05.c PS.04.01.01.c PS.04.01.02.b WHST. 11-12.1e MP 2 MP 3 MP 4 |
| Determine economic value of raw materials and finished products | <ul style="list-style-type: none"> Predict wholesale and retail prices of arrangements using sketches and anticipated wholesale costs of materials | WHST. 11-12.1e MP 2 MP 3 MP 4 MP 6 |
| Develop sketches and plans for specific designs and event flowers | <ul style="list-style-type: none"> Develop a series of sketches with materials lists for exemplars as well as for potential designs | PS.01.01.02.c PS.04.01.01.c PS.04.01.02c WHST. 11-12.1e MP 4 |
| Evaluate floral arrangements using design rubric | <ul style="list-style-type: none"> Critique a given floral arrangement and provide suggestions for improving the design Critique peer arrangements and provide written suggestions for improving designs | CS.01.01.06.a PS.01.01.02.c PS.04.01.02.c WHST. 11-12.1e SL.11.-12.4 |

ECE Students

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|---|---|--|
| Develop sketches and plans for specific designs and event flowers | <ul style="list-style-type: none"> • Create floral materials order based on needs of entire class • Create a cohesive set of designs following a specific theme | PS.01.01.02.c PS.04.01.01.c PS.04.01.02c WHST. 11-12.1e MP 4 |
| Evaluate floral arrangements using design rubric | <ul style="list-style-type: none"> • Critique a given floral arrangement and provide suggestions for improving the design • Identify materials used in a given arrangement and suggest alternatives • Critique peer arrangements and provide written suggestions for improving designs | CS.01.01.06.a PS.01.01.02.c PS.04.01.02.c WHST. 11-12.1e SL.11.-12.4 |
| Determine economic value of raw materials and finished products | <ul style="list-style-type: none"> • Plan a design and create two additional similar designs to meet alternative price points • Justify in writing how the alternative designs are providing an appropriate value for the customer • Create a marketing plan for a specific holiday | PS.01.01.02.c PS.04.01.01.c PS.04.01.02c WHST. 11-12.1e MP 2 MP 3 MP 4 MP 6 |
| Create a design portfolio | <ul style="list-style-type: none"> • Chronicle floral design work in a portfolio including sketches (plans), photographs of finished design, materials lists, wholesale costs, retail prices, marketing plan, and an evaluation of the arrangement with respect to design principles • Assess design plans with respect to completed arrangements | CS.01.01.02.c CS.02.04.01.c RST.11-12.4 WHST. 11-12.1e. |

Italicized items indicate technology use

Assessed Vocabulary:

Antitranspirant

Garland

Hydrating solution

Novelties

Shattering

Standard divisional pricing

Standard percentages

Topiary

Varied percentages

Classroom Use Vocabulary

Accents

Pierce-wiring

Ratio markup

Assessments:

- Class assignments
- Floral design projects
- Floral portfolio

Resources/Materials:

- Floral materials will be selected based on season and availability
- Hard goods: floral snips, floral foam, design bowls, floral tape & wire, satin, organza, & wired ribbons, holiday accents
- Text: The Art of Floral Design, Hunter
- Text: Florists' Review Design School
- Text: Floriculture: Designing & Merchandising, Griner
- Florists' Review Magazine
- Floral design rubric
- www.floristsreview.com
- www.ftd.com
- www.teleflora.com
- www.1800flowers.com

Title: Advanced Floral Art/ECE Advanced Floral Art

Unit Overview: Advance 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 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. This class will follow a syllabus approved by the Plant Science Department at the University of Connecticut. Agri-Science students have the option of taking the class for college credit or as an Agri-Science IV unit.

Suggested Time: One quarter

Ledyard High School Expectations for Student Learning:

- Read and write critically and effectively for a variety of purposes
- Speak clearly and communicate ideas accurately in a variety of settings
- Demonstrate critical thinking skills

Agriculture, Food, and Natural Resources Standards:

- CS.01.01.01.c.** Work independently and in group settings to accomplish a task
- CS.01.01.02.c** Assess outcomes to determine success for a task
- CS.01.03.02.c.** Create a plan of action to complete a task based on a conceptualized idea
- CS.02.04.01.c** Demonstrate critical and creative thinking skills while completing a task
- CS.02.04.02.c** Implement effective problem solving strategies
- CS.03.01.03.c** Make effective business presentations
- CS.06.02.01.a** Use proper safety practices/personal protective equipment
- CS.07.04.01.c** Apply general workplace safety precautions/procedures.
- CS.08.01.01.c** Use tools and equipment appropriately to complete a specific task
- ABS.05.01.02.a** Name and explain the impact of external economic factors on an AFN business
- ABS.05.01.04.a** Calculate percentages, ratios, and related business applications
- ABS.06.04.01.b** Develop advertising campaigns that promote products and service
- ABS.07.02.02.c** Develop and implement a product supply and distribution plan that meets the goals and objectives of an AFNR business
- PS.01.01.02.c** Identify agriculturally important plants by scientific names
- PS.01.02.05.c** Apply the knowledge of flower structures to plant breeding, production and use.
- PS.03.05.03.b** Explain the proper conditions to maintain the quality of plants and plant products held in storage.
- PS.03.05.04.b** Demonstrate techniques for grading, handling, and packaging plants and plant products for distribution

- PS.04.01.01.c** Select plants, hard goods, supplies and other materials for use in a design based on a range of criteria.
PS.04.01.02.c Create and implement designs by following established principles of art

Common Core State Standards

- RST.11-12.4** Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text
- RST.11-12.8** Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
- WHST. 11-12.1e** Provide a concluding statement or section that follows from or supports the argument presented.
- 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.
- MP 2** Reason abstractly and quantitatively
MP 3 Construct viable arguments and critique the reasoning of others
MP 4 Model with mathematics
MP 6 Attend to precision

| Objectives | Required Activities/ Suggested Activities | AFNR Standards/CCSS |
|--|---|--|
| Identify and use color harmonies effectively | <ul style="list-style-type: none"> • Select appropriate floral materials using color theory • Apply color theory to both individual designs as well as event plans | CS.02.04.01.c PS.04.01.01.c PS.04.01.02.c RST.11-12.4 |
| Identify and compare Oriental and western floral design styles | <ul style="list-style-type: none"> • Identify various Oriental floral design styles • Create a lesson to teach peers about an assigned Oriental style • Compare Oriental styles with traditional western designs and identify Oriental influences in contemporary western arrangements | PS.01.01.02.b PS.04.01.02.c RST.11-12.4 WHST. 11-12.1e SL.11.-12.4 |
| Implement practices to extend the life of cut flowers and greens | <ul style="list-style-type: none"> • Determine the maintenance requirements of various floral materials • Condition purchased flowers appropriately to ensure a long life adapting procedures as dictated by species requirements | PS.03.05.04.b PS.01.02.05.c PS.03.05.03.b RST.11-12.8 |

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| | | WHST. 11-12.1e WHST. 11-12.4. MP 2 MP 4 |
| Adapt design principles to create non-traditional floral arrangements | <ul style="list-style-type: none"> • Sketch plans for arrangements and create flower orders • Adapt plans to use available flowers in non-traditional designs such as Oriental and asymmetrical designs • Select appropriate flowers based on size, color, and use in designs • Individualize arrangements by selecting appropriate floral materials and accents • Create a floral arrangement to fulfill the requirements of a flower show theme | CS.01.01.01.c CS.01.03.02.c. CS.03.01.03.c CS.02.04.01.c CS.02.04.02.c CS.06.02.01.a CS.08.01.01.c PS.01.01.02.b PS.01.02.05.c PS.03.05.04.b PS.04.01.01.c PS.04.01.02.b |
| Develop sketches and plans for specific designs and event flowers | <ul style="list-style-type: none"> • Make practice sketches and plant lists using existing floral arrangements • Create a sketches for proposed designs for single arrangements or events • Work in teams to develop holiday or event design samples and present designs to a panel of judges for evaluation • Evaluate sketches as useful tools for constructing designs • Interview a potential “client” to determine needs and interests and create a design to fulfill those requirements | CS.01.01.01.c CS.01.03.02.c. CS.03.01.03.c CS.02.04.01.c CS.02.04.02.c CS.06.02.01.a CS.08.01.01.c ABS.06.04.01.b ABS.07.02.02.c PS.01.01.02.b PS.01.02.05.c PS.04.01.01.c PS.04.01.02.c SL.11.-12.4 |
| Evaluate floral arrangements using design rubrics | <ul style="list-style-type: none"> • Identify aspects of floral design standards in an exemplar • Use floral design rubrics to evaluate arrangements • Implement design principles when creating or modifying an arrangement • Assess arrangements and in writing indicate how each arrangement meets each design principle. | CS.02.04.01.c CS.02.04.02.c PS.01.01.02.b PS.01.02.05.c PS.04.01.02.c RST.11-12.4 |

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| | <ul style="list-style-type: none"> Assess peer arrangements using the floral design rubric and provide written feedback Create a design portfolio of all arrangements constructed and evaluate each for application of principles, potential use, and provide suggestions for improvement | WHST. 11-12.1e SL.11.-12.4 MP 4 MP6 |
| Determine economic value of raw materials and finished products | <ul style="list-style-type: none"> Explain factors that affect wholesale costs and retail pricing of floral designs particularly for those associated with special events Determine the amount and types of materials used in an arrangement and calculate the wholesale cost and an appropriate retail price | CS.02.04.02.c ABS.05.01.02.a ABS.05.01.04.a PS.01.02.05.c MP 4 MP 6 |

Level 1

| | | |
|---|---|---|
| Adapt design principles to create non-traditional floral arrangements | <ul style="list-style-type: none"> Develop alternative plans for given arrangement indicating how that arrangement can be adapted to meet both higher and lower price points Create a design for a juried “flower show” | PS.01.02.05.c PS.04.01.01.c PS.04.01.02.b WHST. 11-12.1e MP 2 MP 3 MP 4 |
| Determine economic value of raw materials and finished products | <ul style="list-style-type: none"> Predict wholesale and retail prices of arrangements using sketches and anticipated wholesale costs of materials Create a plan to price and market floral arrangements as part of the floral design portfolio | ABS.06.04.01.b WHST. 11-12.1e MP 2 MP 3 MP 4 MP 6 |
| Develop a marketing plan | <ul style="list-style-type: none"> With a team develop a design to meet specific criteria and prepare a sales presentation | ABS.06.04.01.b ABS.07.02.02.c |

ECE Students

| | | |
|---|--|--|
| Develop sketches and plans for specific designs and event flowers | <ul style="list-style-type: none"> Develop a series of sketches with materials lists for exemplars as well as for potential designs | PS.01.01.02.c PS.04.01.01.c PS.04.01.02c WHST. 11-12.1e MP 4 |
|---|--|--|

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|---|--|--|
| Evaluate floral arrangements using design rubric | <ul style="list-style-type: none"> • Critique a given floral arrangement and provide suggestions for improving the design • Identify materials used in a photograph of a given arrangement and suggest alternative materials | CS.01.01.06.a PS.01.01.02.c PS.04.01.02.c WHST. 11-12.1e SL.11.-12.4 |
| Determine economic value of raw materials and finished products | <ul style="list-style-type: none"> • Plan and create two similar designs to meet alternative price points • Justify cost alternatives in two similar designs | PS.01.01.02.c PS.04.01.01.c PS.04.01.02c WHST. 11-12.1e MP 2 MP 3 MP 4 MP 6 |

Italicized items indicate technology use

Vocabulary:

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

Classroom Use Vocabulary:

| | | | |
|-------------------|-----------------------|-----------------------|--------------|
| Hand-tied bouquet | Line-mass arrangement | Marketing | Toss bouquet |
| Line arrangement | Negative space | Pomander/kissing ball | |

Assessments:

- Quizzes
- Class assignments
- Floral design projects
- Design and marketing proposals
- Event plan
- Floral portfolio

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"
- "How to make a hand-tied bouquet with roses and Dendrobium orchids" https://www.youtube.com/watch?v=PaHpzZq_25E
- "Stephanotis Care and Handling" <https://www.youtube.com/watch?v=YCYXEZWUXwg>
- Florists' Review Magazine
- Floral design rubric
- www.floristsreview.com
- www.ftd.com
- www.teleflora.com
- www.1800flowers.com

UCONN Course Syllabus
UCONN Floral Art (HORT 3530-800L)
Ledyard High School - Agri-Science IV Horticulture
Semester 2

Course Description:

Prerequisite: HORT 2520. In-depth study of post-harvest requirements for specialized floral crops. Exposure to novel floral materials and abstract, tribute, high-style, and wedding designs. Retail price structuring, wire services, and mass-production concepts.

Course Eligibility Guideline:

A student must pass HORT 2520 with a grade of a "C" or higher to continue on to HORT 3530.

Text: The Art of Floral Design, Hunter

Supplemental Materials:

"Florist Review" magazine

Floriculture: Designing & Merchandising, Griner

Florists Review Design School

Complete ID Preparation for the National FFA Floriculture CDE

Grading Scale

| | |
|----|----------|
| A | 93 – 100 |
| A- | 90 – 92 |
| B+ | 87 – 89 |
| B | 83 – 86 |
| B- | 80 – 82 |
| C+ | 77 – 79 |
| C | 73 – 76 |
| C- | 70 – 72 |
| D+ | 67 – 69 |
| D | 63 – 66 |
| D- | 60 – 62 |
| F | > 60 |

Note that grades of C- and below will not be eligible for UCONN credit.

Tentative Schedule:

- Week 1: Introduction, General Flower Information
Review tools and flower care and handling
Review design principles
Arrangement #1: Floral Centerpiece
- Week 2: Oriental Designs
Arrangement #2: Oriental Design
Review pricing arrangements for sale
- Week 3: Funeral Arrangements and Floral Tributes
Evaluating Floral Arrangements
Arrangement #3: Casket Spray (in design teams) and coordinated floral piece (student choice)
- Week 4: Wearable Flowers: Corsages & Boutonnieres
Review wiring, taping, gluing, bow construction
Marketing and pricing for retail sale
Arrangement #4: Corsages and coordinating Boutonnieres
Peer review of arrangements
- Week 5: Wedding Bouquets
Arrangement #5: Hand-Tied Bouquet
Arrangement #6: Cascade Bouquet
Pricing
- Week 6: Wedding Bouquets – designing for a customer
Peer Reviews of Arrangements
Arrangement #7: Create bridal bouquet to fill a “customer’s” request
- Week 7: Line Arrangement
Arrangement #8: Asymmetrical Arrangement
Arrangement #9: Hogarth Curve/S-Curve
- Week 8: Planning for an event
Arrangement #10: Holiday or Event Design

Week 9: Team Design Work for a Given Event/Sale
Marketing
Arrangement #11: Arrangement coordinated with team
Unit Test
Portfolio Due

Assessments:

| | |
|---------------------|-------------|
| Quizzes | 200 |
| Unit Exam | 100 |
| Portfolio | 300 |
| Arrangements | 1100 |
| Class Assignments | 100 |
| Weekly Class Grades | <u>200</u> |
| Total Points | 1900 |

IMPORTANT NOTES!

Students are expected to complete all assignments in a timely manner. Because of the number of arrangements and the perishable nature of floral materials **all arrangements and corsages must be completed in the class time allowed**. Students may come in before school, stay after school, or come in during a study hall to complete arrangements but no additional class time will be given.

For any assignment or arrangement that is submitted late the student's grade will be decreased by 1 letter grade for each day.

If you should miss class when an arrangement is assigned and do not return to school in enough time to complete it you must complete the arrangement on your own time or complete a written assignment to make up for that arrangement. If either of these is not submitted you will be assigned a grade of "0".

Title: Senior Project

Unit Overview: Most Agri-Science IV students will develop and complete a culminating project at the end of the school year. This project will give students the opportunity to demonstrate the application of critical skills learned over the course of their high school careers through a comprehensive project selected with the assistance of their Agri-Science teachers. Although this option is available to all students there are some who may select an alternative unit as a replacement. "Agricultural Products" (see Ag Sci IV, Animal Science curriculum) will be available to all students with the exception of those who are enrolled in ECE Horticulture classes.

Suggested Time: One quarter

Ledyard High School Expectations for Student Learning:

- Read and write critically and effectively for a variety of purposes
- Speak clearly and communicate ideas accurately in a variety of settings
- Employ problem-solving skills effectively
- Demonstrate critical thinking skills
- Employ effective research and study skills

Agriculture, Food, and Natural Resources Standards:

CS.01.01.01.c Work independently and in group settings to accomplish a goal

CS.01.01.02.c Assess outcomes to determine success for a task

CS.01.01.03.c Implement an effective project plan

CS.01.01.04.b. Use appropriate and reliable resources to complete an action or project

CS.01.01.05.c. Implement a plan that minimizes physical, financial, and professional risks and analyze results

CS.01.01.07.c. Evaluate actions taken and make appropriate modifications to personal goals

CS.01.03.02.c. Create a plan of action to complete a task based on a conceptualized idea

CS.01.02.02.c. Engage others in conversations to respond to an obstacle when completing a task

CS.01.04.06.c. Analyze one's level of self-discipline and causes for lack of self-discipline

CS.01.06.05.c. Implement a plan to develop new knowledge and skills related to professional and person aspirations.

CS.02.04.01.c Demonstrate critical and creative thinking skills while completing a task

CS.02.04.02.c Implement effective problem solving strategies

CS.03.03.03.c. Respond to feedback to improve a situation, skill or performance

CS.06.02.01.a Use proper safety practices/personal protective equipment

CS.07.04.01.c Apply general workplace safety precautions/procedures.

CS.08.01.01.c Use tools and equipment appropriately to complete a specific task

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.
- 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. 11-12.1e.** Provide a concluding statement or section that follows from or supports the argument presented.
- WHST. 11-12.4.** Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
- 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.
- 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 to add interest.
- SL.11-12.6** Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate.

| Objectives | Required Activities/ Suggested Activities | AFNR Standards/CCSS |
|---|---|--|
| Develop a plan for an independent, agriculturally-related project | <ul style="list-style-type: none"> • With assistance from advisors, identify a suitable topic to meet the established requirements for the senior project • Submit a formal project proposal delineating goals, activities, procedures, and materials • Conduct necessary background research to develop a plan | CS.01.01.04.b. CS.01.03.02.c. CS.02.04.01.c RST.11-12.4 WHST. 11-12.4. |
| Execute a project plan in order to meet established goals | <ul style="list-style-type: none"> • Establish clear project objectives • Create a weekly plan for research and work • Identify procedures to effectively complete the project • Create a time-line to complete work • Work safely and efficiently • Conduct research as needed to identify and solve problems • Work safely in a shop / lab situation | CS.01.01.01.c CS.01.01.03.c CS.01.01.04.b. CS.01.01.05.c. CS.01.03.02.c. CS.01.06.05.c. CS.02.04.01.c CS.02.04.02.c CS.06.02.01.a CS.07.04.01.c CS.08.01.01.c RST.11-12.4 |

| | | |
|--|---|---|
| | | RST.11-12.7 WHST. 11-12.4. |
| Assess progress and modify plans as needed | <ul style="list-style-type: none"> • Use journal to record successes and problems • Discuss issues with advisor and peers in order to solve problems • Make adjustments to plan as needed • Conduct research as needed to identify and solve problems | CS.01.01.02.c CS.01.01.04.b. CS.01.01.05.c. CS.01.01.07.c. CS.02.04.01.c CS.02.04.02.c RST.11-12.4 RST.11-12.7 WHST. 11-12.4. |
| Journal accomplishments, problems, and propose solutions | <ul style="list-style-type: none"> • Record progress in a journal including weekly assessments of work | CS.01.01.02.c CS.01.01.07.c. CS.02.04.02.c WHST. 11-12.4. |
| Present a summary of project | <ul style="list-style-type: none"> • Make a presentation to class of project work • Evaluate work and final project | CS.01.01.02.c CS.01.01.07.c. CS.02.04.01.c WHST. 11-12.1e WHST. 11-12.4. SL.11.-12.4 SL.11-12.5 SL.11-12.6 |

Level 1

| | | |
|---|--|---------------------------------|
| Develop a plan for an independent, agriculturally-related project | <ul style="list-style-type: none"> • Select AFNR standards applicable to project | CS.01.01.01.c |
| Assess progress and modify plans as needed | <ul style="list-style-type: none"> • Initiate discussions with advisors and peers in order to identify and solve problems | CS.01.02.02.c CS.01.04.06.c. |

ECE Students

| | | |
|---|---|---|
| Develop a plan for an independent, agriculturally-related project | <ul style="list-style-type: none">• Work independently to develop an appropriate topic to meet established criteria | CS.01.01.01.c |
| Assist students with project tasks | <ul style="list-style-type: none">• Provide assistance to other students as needed | CS.02.04.02.c |
| Assess progress and modify plans as needed | <ul style="list-style-type: none">• Reflect in journal and through discussions | CS.01.04.06.c. CS.01.02.02.c CS.03.03.03.c. |
| Present a summary of project | <ul style="list-style-type: none">• Create a presentation for peers utilizing digital media | SL.11-12.5 |

Italicized items indicate technology use

Vocabulary:

Vocabulary is dependent upon topic and will be identified by each student

Assessments:

- Weekly plan
- Weekly journal
- Weekly work/participation evaluation
- Completed project
- Presentation

Resources/Materials:

- Resources are dependent on topic and will be identified by each student

Title: Agricultural Products

Unit Overview: This unit will look at the food delivery system. After a quick review of human digestion and food nutrients, the course will look at the production and safe handling of agricultural products from production to consumer. Included will be food borne illnesses, preservation, and handling. Further students will consider the implications of a vegetarian and vegan diet, as well as conventional versus small scale, locally grown agricultural products.

Suggested Time: One Quarter

Ledyard High School Expectations for Student Learning:

- Read and write critically and effectively for a variety of purposes
- Speak clearly and communicate ideas accurately in a variety of settings
- Demonstrate critical thinking skills

Agriculture, Food, and Natural Resources Standards:

ABS.01.01.01.a. Recognize principles of capitalism as related to AFNR businesses.

ABS.05.01.02.a Name and explain the impact of external economic factors on an AFNR Business.

ABS.05.01.04.a Calculate percentages, ratios, and related business applications

CS.02.04.01.c Demonstrate critical and creative thinking skills while completing a task

CS.02.04.02.c Implement effective problem solving strategies

CS.06.02.01.a Use proper safety practices/personal protective equipment

CS.07.04.01.c Apply general workplace safety precautions/procedures.

CS.08.01.01.c Use tools and equipment appropriately to complete a specific task

FPP.01.01.01.b. Evaluate changes and trends in the food products and processing industry.

FPP.01.01.02.b. Discuss the issues of safety and environmental concerns about foods and food processing (e.g., Genetically Modified Organisms, microorganisms, contamination, and irradiation).

FPP.01.02.01.b. Evaluate the changes in the food products and processing industry brought about by industry organizations or regulatory agencies.

FPP.02.02.01.b. Outline procedures to eliminate possible contamination hazards associated with food products and processing.

FPP.02.03.01.a. Explain techniques and procedures for the safe handling of food products.

FPP.02.03.03.a. Describe the effects food-borne pathogens have on food products and humans.

FPP.03.01.03.a. Explain the Food Guide Pyramid in relation to essential nutrients for the human diet.

PP.03.01.04.a. Discuss common food constituents (e.g., proteins, carbohydrates, fats, vitamins, minerals).

FPP.03.01.05.b. Describe the purpose of common food additives.

FPP.04.01.01.b. Discuss factors that affect quality and yield grades of food products.

FPP.04.01.03.a. Identify and describe accepted animal treatment and harvesting techniques.

- FPP.04.02.01.b.** Discuss desirable qualities of processed meat, egg, poultry, fish and dairy products.
- FPP.04.03.05.a.** Explain materials and methods of food packaging and presentation.
- FPP.04.03.06.a.** Identify and explain storage conditions to preserve product quality.
- FPP.04.03.06.b.** Select methods and conditions for storing raw and processed food products
- PS.03.05.03.b.** Explain the proper conditions to maintain the quality of plants and plant products held in storage

Common Core State Standards:

- WHST.11-12.2d** 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 to the expertise of likely readers.
- 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.
- 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.

- MP1** Make sense of problems and persevere in solving them
- MP 4** Model with mathematics
- MP 6** Attend to precision

| Objectives | Required Activities/ Suggested Activities | AFNR Standards/CCSS |
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| Identify and describe the function of the organs of the human digestive tract. | <ul style="list-style-type: none"> • Label a diagram of the human digestive tract, identifying the organs and giving the function of each. | FPP.03.01.03.a. SL.11.-12.4 |
| Outline the role each of the six food nutrients provide in the human diet. | <ul style="list-style-type: none"> • Name the six food nutrients and explain what they provide for normal human health and physiology. | FPP.03.01.04.a. |
| Outline the guidelines for safe handling of food and raw materials. | <ul style="list-style-type: none"> • Summarize the Ledge Light Health District guidelines for safe handling of food. | ABS.05.01.02.a FPP.02.02.01.b. FPP.02.03.01.a FPP.02.03.03.a. FPP.04.01.01.b FPP.04.01.03.a FPP.04.02.01.b. RST 11-12.4 |

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| Identify food spoilage and differences in food poisoning (contrast food borne infection and intoxication). | <ul style="list-style-type: none"> • Categorize food borne pathogens as causing food infection or food intoxication. | FPP.02.03.03.a PS.03.05.03.b. |
| List common food additives and how they enhance foods. | <ul style="list-style-type: none"> • Create a chart of food additives and how they alter foods. | FPP.03.01.05.b |
| Apply methods of food preservation (ie - freezing, drying, fermenting, pickling, etc.) | <ul style="list-style-type: none"> • Make butter • Make yogurt • Make ice cream • Make mozzarella • Dehydrate fruit • Make (dried meat) jerky • Make pickles | ABS.05.01.04.a CS.02.04.01.c CS.02.04.02.c CS.06.02.01.a CS.07.04.01.c CS.08.01.01.c FPP.04.03.05.a FPP.04.03.06.a. FPP.04.03.06.b. |
| Recognize principles of capitalism as relates to food and food distribution. | <ul style="list-style-type: none"> • Create a flow chart of various foods and their path from farm to consumer. • Compare specific diets (vegetarian, vegan, etc.) | ABS.01.01.01.a. FPP.01.01.01.b. FPP.01.02.01.b |

Level 1

| Objectives | Required Activities/ Suggested Activities | AFNR Standards/CCSS |
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| Apply methods of food preservation (ie - freezing, drying, fermenting, pickling, etc.) | <ul style="list-style-type: none"> • Compare and contrast various preservation methods on raw foods | ABS.05.01.04.a CS.02.04.01.c CS.02.04.02.c CS.06.02.01.a CS.07.04.01.c CS.08.01.01.c FPP.04.03.05.a FPP.04.03.06.a. FPP.04.03.06.b. |

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| Analyze the feasibility of personal independence and sustainability with regard to food in New England. | <ul style="list-style-type: none"> Outline an annual, month by month schedule of home grown and produced food. Compare availability of New England produced foods to that of foods for sale from other parts of the U. S. and other countries | ABS.05.01.04.a CS.02.04.01.c CS.02.04.02.c CS.06.02.01.a CS.07.04.01.c CS.08.01.01.c FPP.04.03.05.a FPP.04.03.06.a. FPP.04.03.06.b. WHST.11-12.2d RST 11-12.4 SL.11.-12.4 |
| Discuss the issues of safety and environmental concerns about foods and food processing (e.g., Genetically Modified Organisms, microorganisms, contamination, and irradiation). | <ul style="list-style-type: none"> Prepare and give a Power Point presentation on a safety or environmental issue in the food delivery system. | FPP.01.01.02.b. |

Italicized items indicate technology use

Assessed Vocabulary:

Absorption

C. botulinum

Casein

Clostridium perfringens

Colloid

Digestion

Escherichia coli

Food infection

Food Intoxication

Food Nutrient

Homogenization

Metabolism

Myoglobin

Pasteurization

Salmonella

Staphylococcus aureus

Sterilization

Value-added

Assessments:

- Lab activities
- Class assignments
- Tests
- Quizzes
- Guest presentation/field trip reflections

Resources/Materials:

- Introduction to Food Science, Rick Parker, Delmar, 2003.
- Food Science and Safety, George J. Seperich, Interstate, 1998.
- Ledge Light Health District Guide for Food Handling.