

Wallingford Public Schools - HIGH SCHOOL COURSE OUTLINE

Course Title: Animal Technology / Food Science 1	Course Number: 8273
Department: Agricultural Education	Grade(s): 9
Level(s): Academic	Credit: 1
Course Description Freshman course work introduces students to dogs and cats, tractor driving, animal behavior and handling, food science and butterfly gardening. Students will be introduced to and participate in the Lyman Hall Chapter of the national organization, FFA. Students will start to develop a portfolio and skills to prepare them for future careers in agricultural technology, veterinary technology, and companion animal sales and services.	
Required Instructional Materials Sufficient Hands-on Materials	Completion/Revision Date Approved by Board of Education October 15, 2007

Mission Statement of the Curriculum Management Team

The mission of the Career and Technical Education Curriculum Management Team is to ensure that students, as a result of their experiences in K-12, will demonstrate transferable skills, knowledge, and attributes for successful life management, employment, career development, post-secondary educational opportunities, and life long learning.

Enduring Understandings for the Course

- Self-reflection of learning experiences, in and out of school, fosters the development of a life long learner. Life long learners are able to apply and refine skills as they prepare for their post-high school endeavors.
- Leadership organizations, such as FFA, offer numerous opportunities for members such a sense of community, leadership activities, travel, scholarships, social activities, etc.
- Safe operation of tractors and equipment is essential to enhance driving skills and ensure safety.
- Learned skills and safety procedures will transfer to allow students to confidently operate many different types of equipment.
- Without understanding that dog and owner should be matched, cute puppies can turn into nasty dogs.
- Companion animals require different care based on their breed, temperament and ability.
- Career planning and preparation requires self assessment and involves informed responsible decision making during high school and beyond.
- Animal handlers can chose appropriate actions based on an understanding of how animals communicate, learn and behave in any given situation.
- Many species of animals are raised predominantly as a source of food.
- Standards exist for the care and housing of animals to ensure humane treatment.

<ul style="list-style-type: none">• Safe and standardized handling of food animal products limits the exposure to food borne illness.
<ul style="list-style-type: none">• Many variables influence successful starting, growing and maintenance of plants.
<ul style="list-style-type: none">• Soil properties dictate the success of plant growth and can be remediated to improve the outcome.
<ul style="list-style-type: none">• Humans can design habitats to foster the life cycles of butterflies, replacing those destroyed by land development.
<ul style="list-style-type: none">• The success of a butterfly garden can be determined by many factors such as placement, plant type, soil and suitability to different butterfly species.

<u>LEARNING STRAND</u>	
1.0 Transferable Skills	
<u>ENDURING UNDERSTANDING(S)</u> <ul style="list-style-type: none"> Self-reflection of learning experiences, in and out of school, fosters the development of a life long learner. Life long learners are able to apply and refine skills as they prepare for their post-high school endeavors. 	<u>ESSENTIAL QUESTION(S)</u> <ul style="list-style-type: none"> What is the importance of maintaining a portfolio? What are the qualities of an effective oral presentation? What safety precautions do I have to follow? What can I do differently next time? What does a cooperative group require to function successfully? How can I assess the situation and implement change? What are the characteristics of an organized person? What do I need to do to be more organized? How can I manage informational research, organize the information, and present it professionally? What is a leader?
<u>LEARNING OBJECTIVES</u> The students will: <ul style="list-style-type: none"> 1.1 Demonstrate public speaking skills using appropriate visuals and tailoring the presentation to specific audiences. 1.2 Communicate in writing about a topic using different formats applying relevant vocabulary, supporting evidence and clear logic. 1.3 Self-assess transferable skills and reflect on areas of strengths and improvement. 1.4 Identify and use the appropriate tools and equipment safely. 1.5 Work cooperatively with fellow peers, teachers, and employers to complete a task. 1.6 Apply problem solving skills to critically approach a situation and work through the steps to solve the problem. 1.7 Develop organizational skills that assist with data collection, data analysis and synthesis. 1.8 Apply research skills to collect information, summarize the findings and to cite the sources used. 1.9 Recognize leadership skills such as: motivating others, negotiating, 	<u>INSTRUCTIONAL SUPPORT MATERIALS</u> <ul style="list-style-type: none"> See other learning strands for integration <u>SUGGESTED INSTRUCTIONAL STRATEGIES</u> <ul style="list-style-type: none"> See other learning strands for integration <u>SUGGESTED ASSESSMENT METHODS</u> <ul style="list-style-type: none"> See other learning strands for integration

<p>participating in meetings, gaining confidence, and gaining self-awareness, etc.</p> <p>1.10 Apply computer-based tools such as PowerPoint, Word, Excel, and Access, to organize and present information.</p> <p>1.11 Demonstrate self expression and creativity through different projects.</p> <p>1.12 Develop a positive attitude and become an independent learner in order to prepare for the future.</p> <p>1.13 Organize and maintain a four year portfolio including a compilation of student products and reflections.</p> <p>1.14 Document SAE (Supervised Agricultural Experience) monthly. This includes recording hours, expenses, income, tasks and applied skills.</p>	
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<u>LEARNING STRAND</u>	
2.0 FFA Leadership Organization - Greenhand Degree <ul style="list-style-type: none"> Approximately 5 weeks 	
<u>ENDURING UNDERSTANDING(S)</u> <ul style="list-style-type: none"> Leadership organizations, such as FFA, offer numerous opportunities for members such a sense of community, leadership activities, travel, scholarships, social activities, etc. 	<u>ESSENTIAL QUESTION(S)</u> <ul style="list-style-type: none"> What are the member benefits of FFA? How are official meetings conducted? What is the rationale for conducting parliamentary correct meetings? What is the importance of maintaining a portfolio?
<u>LEARNING OBJECTIVES</u> – The students will: <p>2.1 Meet the criteria for the FFA Greenhand Degree. This includes:</p> <ul style="list-style-type: none"> Recall important historical and current facts regarding the FFA State the aims and purposes of the FFA Write the FFA Motto and explain the meaning Write the FFA Creed and explain the meaning State the official FFA colors Describe the FFA Emblem and explain the meaning of each part Describe FFA official dress Describe the 4 types of active membership Describe the benefits of paying dues Describe local, state, national and international activities available to FFA members Describe the degrees of active FFA membership List the chapter officers, their symbols, and explain their duties Demonstrate basic parliamentary abilities Describe the contests and awards programs a member can participate in on the local, state and national levels <p>2.2 Recognize the importance and organization of the four year portfolio.</p> <ul style="list-style-type: none"> Dividers Title page Table of contents Summer summary 	<u>INSTRUCTIONAL SUPPORT MATERIALS</u> <ul style="list-style-type: none"> FFA manual www.ffa.org Paraphernalia such as gavel, officer symbols, jacket, <i>Robert's Rules of Order</i>, etc. <u>SUGGESTED INSTRUCTIONAL STRATEGIES</u> <ul style="list-style-type: none"> Complete application for the Greenhand Degree Construct a time-line of historical FFA events Recite the FFA motto, creed, membership response and salute Participate in a mock meeting Write a letter to the National FFA recommending a change in the official FFA dress Internet research on FFA organization and activities Illustrate and color a personal emblem Write about the FFA Code of Ethics and identify those codes that seem to be “old fashioned behavior” and those that seem to be “current” Attend first FFA monthly meeting <u>SUGGESTED ASSESSMENT METHODS</u> <ul style="list-style-type: none"> Score 80% or higher on FFA unit test Meet criteria for Greenhand Degree and complete written application Portfolio products may include: <ul style="list-style-type: none"> Skill sheet A time line of FFA history Create a personal FFA emblem

- SAE hours
- SAE planning forms
- Agricultural inventory

- Write a letter to the National FFA recommending a change in the official FFA dress
- Writing sample about the FFA Code of Ethics

LEARNING STRAND

3.0 Tractor Driving

- Approximately 4 weeks

ENDURING UNDERSTANDING(S)

- Safe operation of tractors and equipment is essential to enhance driving skills and ensure safety.
- Learned skills and safety procedures will transfer to allow students to confidently operate many different types of equipment.

ESSENTIAL QUESTION(S)

- What is safe tractor operation?
- What precautions are necessary when driving a tractor?
- How does attaching an implement change driving a tractor?
- How does backing up a tractor differ from driving forward?

LEARNING OBJECTIVES – The students will:

- 3.1 Evaluate surroundings and determine acceptable speeds for conditions and skill level required.
- 3.2 Demonstrate proper procedure for starting a tractor.
- 3.3 Select proper gear range for attached load.
- 3.4 Identify parts and function of the tractor important for safe operation.
- 3.5 Demonstrate backing up a tractor into a designated space with and without an implement.
- 3.6 Demonstrate hitching up equipment safely to a tractor.
- 3.7 Demonstrate driving through an obstacle course with an attached implement.
- 3.8 Operate a backhoe safely and efficiently.

INSTRUCTIONAL SUPPORT MATERIALS

- Tractors
- Two wheel wagon
- Four wheel wagon
- Various three point hitch mounted implements
- Owner’s manuals
- Tools and supplies
- Obstacle course location and materials

SUGGESTED INSTRUCTIONAL STRATEGIES

- Review and model safety procedures and rules
- Set up driving course for students to practice driving forward and backing up tractor
- Demonstrate pre-trip checkup
- Peer- instruct others on the safe operation of a tractor
- Writing assignments:
 - Personal letter
 - Procedural writing
 - Safety precautions

SUGGESTED ASSESSMENT METHODS

- Teacher checklist:
 - Start up tractor
 - Back up a tractor into a parking spot
 - Back up tractor and implement into a parking space
 - Drive tractor and implement through an obstacle course
 - Back up tractor and hook up to an implement

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| | <ul style="list-style-type: none">• Peer-assessments using checklist• Portfolio products may include:<ul style="list-style-type: none">• Driving Rubric• Tractor safety assessment• Work sample picture and caption• Writing assignment |
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<u>LEARNING STRAND</u>	
4.0 Introduction to Dogs and Cats <ul style="list-style-type: none"> Approximately 4 weeks 	
<u>ENDURING UNDERSTANDING(S)</u> <ul style="list-style-type: none"> Without understanding that dog and owner should be matched, cute puppies can turn into nasty dogs. Companion animals require different care based on their breed, temperament and ability. 	<u>ESSENTIAL QUESTION(S)</u> <ul style="list-style-type: none"> How are different breeds of dogs similar and different? How are different breeds of cats similar and different? What differentiates domestic dogs and cats from their wild ancestors? How do dogs differ in their basic requirements and abilities?
<u>LEARNING OBJECTIVES</u> The students will: <ul style="list-style-type: none"> 4.1 Identify 50 American Kennel Club (AKC) registered breeds of dogs 4.2 Determine AKC group of the 50 dogs based on breed development and use 4.3 Summarize the evolution of dogs from Tomarctus to present day 4.4 Explore the diverse history, care, use, and trainability of the seven AKC groups. 4.5 Identify major external anatomy points of dog 4.6 Identify 15 registered breeds of cats 4.7 Identify major external anatomy points of cat 4.8 Determine appropriate care for domestic cats 	<u>INSTRUCTIONAL SUPPORT MATERIALS</u> <ul style="list-style-type: none"> PowerPoint presentations Access to print and non-print sources Cat and dog models <i>Caressing the Tiger</i> video <i>Dogs</i> video <u>SUGGESTED INSTRUCTIONAL STRATEGIES</u> <ul style="list-style-type: none"> Present one dog breed from one of the AKC groups in an oral presentation, explaining use, care, history, breed standard, medical issues, and grooming requirements Use cat and dog model to identify external anatomy Use PowerPoint presentation to introduce different breeds of dogs. Create flashcards for dog breed and group identification <u>SUGGESTED ASSESSMENT METHODS</u> <ul style="list-style-type: none"> Design a 3-D model depicting the evolution of dogs Tests and Quizzes Evaluation of class exercises Portfolio products may include: <ul style="list-style-type: none"> Photo and description of class activity related to dogs and cats Skill sheet

LEARNING STRAND	
5.0 Career Exploration <ul style="list-style-type: none"> Approximately 2 weeks 	
ENDURING UNDERSTANDING(S)	ESSENTIAL QUESTION(S)
<ul style="list-style-type: none"> Career planning and preparation requires self assessment and involves informed responsible decision making during high school and beyond. 	<ul style="list-style-type: none"> What job / career are best for me? What is needed for a job / career? How can I prepare for a job / career? How I become a life long learner?
LEARNING OBJECTIVES The students will:	INSTRUCTIONAL SUPPORT MATERIALS
5.1 Identify the differences between a career and a job. 5.2 Compare and contrast various career clusters. 5.3 Interpret results from self assessment to choose a career. 5.4 Develop a career plan (road map). 5.5 Research a career. 5.6 Present career information in a career fair format. 5.7 Explore agriculture careers during career fair presentations in a format where all agricultural careers clusters are represented.	<ul style="list-style-type: none"> <i>Career Exploration Inventory</i> published by JIST Works, John J. Liptak Choices program Career planning notebook Poster board, computer Research materials
	SUGGESTED INSTRUCTIONAL STRATEGIES
	<ul style="list-style-type: none"> Complete Career Exploration Inventory (CEI) Including the following 16 career clusters: Agriculture and Natural Resources; Architecture and Construction; Arts and Communication; Business and Administration; Education and Training; Finance and Insurance; Government and Public Administration; Health Science; Hospitality, Tourism, and Recreation; Human Service; Information Technology; Law and Public Safety; Manufacturing; Retail and Wholesale Sales and Service; Scientific Research, Engineering and Mathematics; Transportation and Distribution and Logistics Define vocabulary related to careers Facilitate students with developing a personal roadmap Guest speakers related to career clusters Integrate LHHS guidance / use roadmap as component to LHHS scheduling Create a web of self List career characteristics – Such as: <ul style="list-style-type: none"> What does the job entail (specific tasks) Salary / Benefits Hours / time requirement Education, training, apprenticeships,

	<ul style="list-style-type: none">etc.• Travel• Level of difficulty (How hard is the work)• Working conditions• Professionalism – advancements, certificates, licenses, organizations• Life style• Career Fair – freshman research and prepare visual to share at career fair• Complete self reflection of career choices• Conduct an informational interview <p><u>SUGGESTED ASSESSMENT METHODS</u></p> <ul style="list-style-type: none">• Career exploration portfolio• Display board for career fair• Road map• Interview summary• Self reflection
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<u>LEARNING STRAND</u>	
6.0 Animal Behavior and Handling <ul style="list-style-type: none"> Approximately 4 weeks 	
<u>ENDURING UNDERSTANDING(S)</u> <ul style="list-style-type: none"> Animal handlers can choose appropriate actions based on an understanding of how animals communicate, learn and behave in any given situation. 	<u>ESSENTIAL QUESTION(S)</u> <ul style="list-style-type: none"> How do animals communicate? How do animals differ in their learning? How do you identify dangerous behaviors and choose appropriate action? How do you safely restrain and/or move animals?
<u>LEARNING OBJECTIVES</u> The students will: <ul style="list-style-type: none"> 6.1 Describe the differences between the types and complexities of animal learning 6.2 Explain how animals communicate (chemical, visual, sound) 6.3 Discuss at least 10 different behaviors exhibited by animals such as gregarious, allelomimetic, care giving/seeking, agonistic, investigative, etc. 6.4 Describe signs of fear or aggression in companion animals 6.5 Demonstrate the proper technique for moving, lifting and restraining of dogs and cats. 6.6 Demonstrate the proper technique for leading, holding and restraining of large animals. 	<u>INSTRUCTIONAL SUPPORT MATERIALS</u> <ul style="list-style-type: none"> Assorted dogs and cats Pony or horse Video on animal behavior Rabies pole, muzzles, cat gloves, cat bag, collars, leashes, etc. <u>SUGGESTED INSTRUCTIONAL STRATEGIES</u> <ul style="list-style-type: none"> View animal behavior videos Prepare poster of one species behaviors Practice handling with available animals Handle large animals Discuss the different factors effecting learning (genetic, habituation, conditioning, imprinting, cognitive) Discuss how animals learn <u>SUGGESTED ASSESSMENT METHODS</u> <ul style="list-style-type: none"> Tests and Quizzes Poster on animal behavior and rubric Evaluation of class exercises Writing assignment-advice column on animal behavior Portfolio products may include: <ul style="list-style-type: none"> Photo and description of class activity related to animal behavior and handling Skill sheet

LEARNING STRAND

7.0 Introduction to Food Science

- Approximately 8 weeks

ENDURING UNDERSTANDING(S)

- Many species of animals are raised predominantly as a source of food.
- Standards exist for the care and housing of animals to ensure humane treatment.
- Safe and standardized handling of food animal products limits the exposure to food borne illness.

ESSENTIAL QUESTION(S)

- What animals are used for food?
- How should food producing animals be housed and cared for?
- Why must food animal husbandry be humane?
- How are animal products processed?
- What safety precautions do I have to follow when handling food?

LEARNING OBJECTIVES The students will:

- 7.1 Differentiate between five breeds of dairy cattle based on appearance, origin, and dairy production.
- 7.2 Differentiate between five breeds of beef cattle based on appearance, origin, and beef production.
- 7.3 Differentiate between ten breeds of poultry based on appearance, origin, and meat/egg production.
- 7.4 Differentiate between seven breeds of goats based on appearance, origin, and dairy/meat production.
- 7.5 Differentiate between six breeds of sheep based on appearance, origin, and meat/wool production.
- 7.6 Differentiate between four breeds of swine based on appearance, origin and meat production.
- 7.7 Describe appropriate housing for livestock species.
- 7.8 Explain basic humane handling and husbandry practices.
- 7.9 Identify cuts of beef, both wholesale and retail.
- 7.10 Grade eggs for freshness using USDA standards.
- 7.11 Diagram the production of milk from the dairy animal to the glass including pasteurization & homogenization
- 7.12 Explain safe handling techniques for animal products.
- 7.13 Pasteurize milk and make soft cheese.
- 7.14 Make butter, ice cream, beef jerky, pork and egg product.

INSTRUCTIONAL SUPPORT MATERIALS

- Web sites related to breed specific info
- www.foodsafety.gov
- www.fightbac.org
- <http://www.urbanext.uiuc.edu/eggs/pdfs/grading.pdf>
- Tour of local farms in the area
- Food products such as eggs, meat, dairy products, etc.
- Food packages and labels
- Specialized equipment including: dehydrator, ice cream maker, pasteurizer, cheese press, etc.

SUGGESTED INSTRUCTIONAL STRATEGIES

- PowerPoint presentations to present information about different breeds and species
- Bus tour of Wallingford farm area to view different food species, housing and humane practices
- Students create flashcards for meat cut identification
- Grade eggs using photo examples and eggs
- Students create and label a "time-line" type chart following milk from dairy animal to glass
- Examine animal product labels for safe handling instructions
- Students create different food products
- Write magazine article on safe handling food such as eggs, meat, and dairy products

SUGGESTED ASSESSMENT METHODS

- Rubric for meat identification cards and dairy “time-line”
- Writing sample – Magazine article on safe handling food
- Student participation in class food preparation activities
- Portfolio products may include
 - Skill sheet
 - Photo and description of class activity related to food production
 - Writing sample – magazine article

LEARNING STRAND

8.0 Butterflies and Butterfly Gardening

- Approximately 6 weeks

ENDURING UNDERSTANDING(S)

- Many variables influence successful starting, growing and maintenance of plants.
- Soil properties dictate the success of plant growth and can be remediated to improve the outcome.
- Humans can design habitats to foster the life cycles of butterflies, replacing those destroyed by land development.
- The success of a butterfly garden can be determined by many factors such as placement, plant type, soil and suitability to different butterfly species.

ESSENTIAL QUESTION(S)

- What is soil?
- What effect will nutrient corrections have on plant growth?
- What is required for successful plant growth?
- What are characteristics of a healthy soil?
- What safety precautions should be observed when using chemicals in the soil?
- What is a plant?
- Why are plants necessary to butterflies?
- How does appropriate habitat support butterflies through their life cycles?

LEARNING OBJECTIVES The students will:

- 8.1 State functions of soil properties such as: pH, nitrogen, phosphorus and potassium.
- 8.2 Demonstrate the correct method for soil sample collection.
- 8.3 Test and evaluate soil samples for pH, nitrogen, phosphorus and potassium.
- 8.4 Investigate the effect of adding lime and aluminum sulfate on the pH of soil.
- 8.5 Explore appropriate soil requirements for plants.
- 8.6 Classify soils based upon the percentage of sand, silt and clay (soil texture).
- 8.7 Determine safety precautions of fertilizer based on MSDS sheets.
- 8.8 Interpret a fertilizer bag label.
- 8.9 Interpret a soil survey map.
- 8.10 Investigate water holding capability and analyze results.
- 8.11 Identify the parts, functions & processes of a root, stem, leaf and flower.
- 8.12 Differentiate between annual, biennial, and perennial plants.
- 8.13 Investigate factors that effect germination.
- 8.14 Identify the anatomy and function of butterfly body parts through life stages.
- 8.15 Determine differences between moths and butterflies.
- 8.16 Document butterfly metamorphosis.

INSTRUCTIONAL SUPPORT MATERIALS

- Soil texture triangle
- Soil test kits
- MSDS sheets
- Fertilizer, lime and aluminum sulfate
- Sample soil survey maps
- Assorted labels from different kinds of fertilizers
- PowerPoint presentation on butterfly species and life cycle
- Butterfly and butterfly gardening videos
- Plant catalogues and databases
- Butterfly metamorphosis equipment and live larvae
- Soil, seeds, potting supplies
- Assorted flowers and plants

SUGGESTED INSTRUCTIONAL STRATEGIES

- Classify soils using soil using soil texture triangle
- Perform soil tests
- Explain information found on MSDS sheet
- Model how to correctly collect soil samples for testing
- Experiment on the effect of lime and aluminum sulfate
- Discuss compaction and aeration
- Graphic organizer to display parts, function and process of plants

<p>8.17 Identify eight CT butterflies.</p> <p>8.18 Explain habitat needs of CT butterflies.</p> <p>8.19 Assess home garden usefulness as butterfly habitat (wind, sun, shelter).</p> <p>8.20 Select appropriate nectar and larval plants to attract common CT butterflies.</p> <p>8.21 Identify growth requirements of butterfly plants (light, temperature, soil, water).</p> <p>8.22 Design a landscape plan for butterfly habitat.</p>	<ul style="list-style-type: none"> • Germinate seeds and observe growth • Dissect flower and sketch and label the parts • Vocabulary reinforcement activities • View butterfly gardening videos • Observe metamorphosis • Create butterfly identification manual • Use Venn diagram to compare and contrast moths and butterflies • Field trip to “Magic Wings” butterfly garden • Model how to develop a landscape plan <p><u>SUGGESTED ASSESSMENT METHODS</u></p> <ul style="list-style-type: none"> • Analysis and conclusion of soil testing • Quizzes and tests • Evaluation of class exercises • Germination lab report • Landscape design plan • Butterfly identification book • Portfolio products may include: <ul style="list-style-type: none"> • Lab report on soil analysis • Photo and description of activity related to soils • Photo and description of activity related to butterfly gardening • Writing assignment • Skill sheet
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