Wallingford Public Schools - HIGH SCHOOL COURSE OUTLINE

Course Title: Animal Technology / Food Science 2	**Course Number**: 8283
Department: Agricultural Education	**Grade(s)**: 10
Level(s): Academic	**Credit(s)**: 1.5

Course Description

Sophomore course work continues to build a foundation for students interested in animal technology and food science. Topics studied include: principles of electricity, veterinary clinical skills (anatomy and physiology and first aid), lab animals, and companion animal management. Students will continue to participate in the Lyman Hall Chapter of the national organization, FFA. Students will continue the development of their portfolio and skills to prepare for future careers in animal technology.

Required Instructional Materials	**Completion/Revision Date**
Sufficient Hands-on Materials	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.
• To secure safe electrical connections students must follow the National Electrical code or the local electrical codes if they are stricter.
• Circuits are built on basic principles that are governed by the movement of charged particles moving through conductors.
• Although different in detail, mammalian anatomy is similar across species.
• Dissection allows us to see anatomy and physiology which might otherwise have remained unseen.
• A crucial component of medical research involves the use of animals.
• Animal survival depends on recognition and management of an injury or medical condition.
• Vital signs are an indicator of an animal's medical condition and can be used to determine choice of professional or owner provided medical attention and effectiveness of treatment(s).
• All organizations, including the FFA, have standardized procedures for operation to help ensure smooth and efficient meetings.
• As leadership changes occur, the standardized operational procedures aid in smooth

transitions and encourage participation by all members.
• The use of laboratory animals is crucial to the success of medical research.
• Laboratory animals must be managed with a humane approach in medical research.
• Successful animal managers must be skilled in the areas of: animal health and management, sanitation, and business and management.

LEARNING STRAND

1.0 Transferable Skills

ENDURING UNDERSTANDING(S)

- 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.

ESSENTIAL QUESTION(S)

- 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?

LEARNING OBJECTIVES The students will:

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, participating in meetings, gaining

INSTRUCTIONAL SUPPORT MATERIALS

- See other learning strands for integration

SUGGESTED INSTRUCTIONAL STRATEGIES

- See other learning strands for integration

SUGGESTED ASSESSMENT METHODS

- See other learning strands for integration

confidence, and gaining self-awareness, etc. 1.10 Apply computer-based tools such as PowerPoint, Word, Excel, and Access, to organize and present information. 1.11 Demonstrate self expression and creativity through different projects. 1.12 Develop a positive attitude and become an independent learner in order to prepare for the future. 1.13 Organize and maintain a four year portfolio including a compilation of student products and reflections. 1.14 Document SAE (Supervised Agricultural Experience) monthly. This includes recording hours, expenses, income, tasks and applied skills.	

LEARNING STRAND

2.0 Electricity
- Approximately 4 weeks

ENDURING UNDERSTANDING(S)
- To secure safe electrical connections students must follow the National Electrical code or the local electrical codes if they are stricter.
- Circuits are built on basic principles that are governed by the movement of charged particles moving through conductors.

ESSENTIAL QUESTION(S)
- How do electricians ensure safe working conditions?
- How do electricians ensure safe working circuits?
- How do you install and/or update electrical switches, outlets and/or lights?
- What is "code"?

LEARNING OBJECTIVES – The students will:

2.1 Explain the purpose of the National Electrical Code.
2.2 Summarize safety procedures when using wiring electrical circuits and using related tools.
2.3 Demonstrate safe procedures when preparing wires for connection.
2.4 Demonstrate the installation of a plug, single pole switch, luminaries, 3-way switch, 4-way switch, and duplex receptacle (outlet).
2.5 Demonstrate problem solving skills by troubleshooting to recognize electrical problems and repair circuits.
2.6 Identify commonly used electrical symbols.
2.7 Calculate properly sized boxes and determine box fill according to NEC requirements.
2.8 Install GFCI devices in a residence correctly.
2.9 Plan an electrical circuit including:
- One light and one switch
- Switch located second in the circuit
- Two lights and one switch and an outlet
- Three way switch, one light and another three way switch
- Three way switch, four way switch, light
- Explain why and where grounding is required
- Estimate wiring costs

2.10 Interpret wiring plans.
2.11 Describe the flow of electrical energy in different circuits and the role of the different wires.

INSTRUCTIONAL SUPPORT MATERIALS
- Assorted electrical wire and fixtures
- Hand tools including wire strippers, diagonal pliers, cable rippers, screwdrivers
- Electric drill and bits
- Mounting boards
- Circuit tester
- Fuses
- Sample wiring plans

SUGGESTED INSTRUCTIONAL STRATEGIES
- Identify name and function of electrical tools
- Prepare directions for installing switches and lights in kitchen
- Model safe procedures
- Define terms commonly used in the NEC
- Various hands-on circuit building
- Model how to install a plug, single pole switch, luminaries, 3-way switch, 4-way switch, and duplex.
- Students use small boards to attach fixtures for wiring and create model circuits. For example, students may be asked to wire a series and parallel circuit with 2 lights and 1 switch and an outlet.
- Attach different upright boxes to a board and wire the boxes
- Discuss GFCI code, where these outlets should be located, and why they are required
- Discuss the importance of a fuse that needs to be installed on each wired project
- Discuss the role of different colored wires
- Discuss the difference between fuses and circuit breakers

	• Business letter – You are a building inspector and your friend wants to purchase a house that was built in 1930. The house has original wiring. Explain the wiring situation you found in the house, what needs to be updated, and what they should ensure that the electrical contractor does to ensure a quality job and to meet code requirements. **SUGGESTED ASSESSMENT METHODS** • Scoring rubrics for projects • Test and quizzes • Portfolio pieces may include: • Work sample • Writing assignment – building inspector • Inspection score sheets

LEARNING STRAND

3.0 Clinical Skills – Anatomy and Physiology
- Approximately 4 weeks

ENDURING UNDERSTANDING(S)
- Although different in detail, mammalian anatomy is similar across species.
- Dissection allows us to see anatomy and physiology which might otherwise have remained unseen.
- A crucial component of medical research involves the use of animals.

ESSENTIAL QUESTION(S)
- How does a mammal's body function?
- How do we safely and successfully carry out a dissection?
- How does structure relate to function?

LEARNING OBJECTIVES – The students will:
3.1 Identify basic mammalian body systems.
3.2 Identify basic senses of mammals and their effect.
3.3 Identify dissection tools and their functions.
3.4 Demonstrate correct tool use and safety procedures during dissection.
3.5 Demonstrate correct dissection techniques
3.6 Identify body parts and their functions during dissection.
3.7 Debate the use of animals in research.
3.8 Develop a position paper to defend their position on the use of animals in research

INSTRUCTIONAL SUPPORT MATERIALS
- *Mosby's Comprehensive Review for Veterinary Technicians*, Monica M. Tighe (Editor), Marg Brown, Marg Brown (Publisher: Elsevier Science).
- *Clinical Anatomy and Physiology for Veterinary Technicians*, Thomas Colville, Joanna M. Bassert, Joanna M. Bassert (Publisher: Elsevier Health Sciences).
- *Laboratory Manual for Comparative Veterinary Anatomy and Physiology*, Phillip E. Cochran (Publisher: Thomson Delmar Learning).
- *Introduction to Veterinary Anatomy & Physiology*, Victoria Aspinall, Melanie O'Reilly(Publisher: Elsevier Health Sciences).
- Presentation boards
- Lab notebooks
- Videos
- Preserved rat specimens for dissection
- Preserved mammal specimens
- Dissection kits
- Safety equipment

SUGGESTED INSTRUCTIONAL STRATEGIES
- Create a 15 minute presentation on a mammal body system or sense
- Model a mammalian dissection (rat)
- Perform a mammalian dissection (rat)
- Review systems and senses using rat, pictures, and worksheets
- Create system and sense identification pages for animal care notebook
- Internet research

	SUGGESTED ASSESSMENT METHODS
	• Portfolio products may include:
	  • Skill sheet
	  • Position paper
	  • Photo work sample
	• Presentation rubric
	• Tests and quizzes
	• Lab practical test
	• System and sense identification pages

LEARNING STRAND

4.0 Clinical Skills – First Aid
- Approximately 4 weeks

ENDURING UNDERSTANDING(S)
- Animal survival depends on recognition and management of an injury or medical condition.
- Vital signs are an indicator of an animal's medical condition and can be used to determine choice of professional or owner provided medical attention and effectiveness of treatment(s).

ESSENTIAL QUESTION(S)
- What is an animal medical emergency?
- How do we use a dichotomous key to identify and handle medical emergencies?
- How can vital signs pinpoint an animal's medical condition?

LEARNING OBJECTIVES – The students will:

4.1 Identify principles of small animal first aid.
4.2 Distinguish between emergencies requiring immediate veterinary assistance and those which can be handled by the animal's owner.
4.3 Determine the steps to handle emergency situations.
4.4 Recall vital signs of companion animals.
4.5 Obtain and assess vital signs.
4.6 Determine a course of action relative to vital signs.

INSTRUCTIONAL SUPPORT MATERIALS
- *Dog Owner's Home Veterinary Handbook*, James M. Giffin, Liisa D. Carlson, Liisa Carlson, (Publisher: Wiley, John & Sons)
- *Pet Lover's Guide to First Aid and Emergencies*, Thomas Day (Publisher: Elsevier Health Sciences)
- *Handbook of Veterinary Procedures and Emergency Treatment*, Robert Warren Kirk, Ford, Steven I. Bistner (Publisher: Saunders W B Co)
- PowerPoint presentations
- Videos
- Assorted medical supplies
- Assorted animal models

SUGGESTED INSTRUCTIONAL STRATEGIES
- Prepare a dichotomous key for assessing home veterinary emergencies
- Prepare pamphlet for pet home medical emergency management
- Create emergency medical assessment pages for animal care notebook
- Create vital signs pages for animal care notebook
- Model how to handle emergencies using principles of first aid and dichotomous key in mock scenarios
- Demonstrate how to handle emergencies using principles of first aid and dichotomous key in mock scenario

	SUGGESTED ASSESSMENT METHODS
	• Portfolio products may include:
	  • Skill sheet
	  • Prepared pamphlet
	  • Photo work sample
	• Using dichotomous key complete mock emergency case study
	• Emergency medical assessment pages for animal care notebook
	• Vital signs pages for animal care notebook

LEARNING STRAND

5.0 FFA Leadership Organization - Chapter Degree
- Approximately 2 weeks

ENDURING UNDERSTANDING(S)
- All organizations, including the FFA, have standardized procedures for operation to help ensure smooth and efficient meetings.
- As leadership changes occur, the standardized operational procedures aid in smooth transitions and encourage participation by all members.

ESSENTIAL QUESTION(S)
- What are the operational procedures that civic organizations utilize?
- How are official meetings conducted?
- What is the rationale for conducting parliamentarian correct meetings?
- What are the qualities of an effective oral presentation?

LEARNING OBJECTIVES – The students will:

5.1 Meet the criteria for the FFA Chapter Degree. This includes:
- Demonstrate basic parliamentary abilities
- Demonstrate five parliamentary procedures in a mock meeting format
- Deliver a 15 minute oral presentation on an agricultural topic
- Other SAE minimum requirements

INSTRUCTIONAL SUPPORT MATERIALS
- FFA manual
- **www.ffa.org**
- Paraphernalia such as gavel, officer symbols, jacket, *Robert's Rules of Order*, etc.

SUGGESTED INSTRUCTIONAL STRATEGIES
- Complete application for the Chapter Degree
- Discuss organizations such as the BOE, wetlands, parliament, and other commissions also use parliamentary procedures
- Create a PowerPoint presentation or design a tri-fold board as a visual aid for the oral presentation
- Create an informational hand-out to aid the oral presentation
- Conduct mock meetings and experience different roles (president, secretary, members, etc.) during these mock meetings
- Type a script to simulate the meeting
- Discuss effective oral presentation skills
- Discuss how to create an outline for an oral presentation

SUGGESTED ASSESSMENT METHODS
- Score 80% or higher on FFA unit test
- Meet criteria for Chapter Degree and complete written application
- Rubric for oral presentation
- Portfolio products may include:
  - Skill sheet
  - Samples of visual aids from presentation (photo of tri-fold board or PowerPoint)
  - Writing sample – script of meeting
  - Outline of oral presentation
  - Informational hand-out

LEARNING STRAND

6.0 Lab Animals
- Approximately 4 weeks

ENDURING UNDERSTANDING(S)
- The use of laboratory animals is crucial to the success of medical research.
- Laboratory animals must be managed with a humane approach in medical research.

ESSENTIAL QUESTION(S)
- Why are laboratory animals critical to the success of medical research?
- What is appropriate handing and care for lab animals?
- What is the IACUC (Institutional Animal Care and Use Committee) protocol for using animals in research?

LEARNING OBJECTIVES – The students will:

6.1 Identify laboratory animals based on suitability and contribution to medical research.
6.2 Determine the requirements for management of lab animals.
6.3 Compare and contrast trainability of small lab animals in a behavior modification model.
6.4 Conduct a lab experiment using mice in a behavior modification model.
6.5 Create a standard lab report for a mouse experiment.

INSTRUCTIONAL SUPPORT MATERIALS
- *Guide for the Care and Use of Laboratory Animals*, National Research Council (Publisher: National Academies Press)
- *Laboratory Animals in Research and Teaching: Ethics, Care, and Methods*, Chana K. Akins (Editor), Sangeeta Panicker, Christoper L. Cunningham (Publisher: American Psychological Association)
- Maze equipment
- Mice
- Animal care equipment

SUGGESTED INSTRUCTIONAL STRATEGIES
- Build a mouse maze
- Train mice to perform the maze on request
- Gather data, using standard lab procedures
- Use a spreadsheet program to track experiment data and progress
- Prepare a research paper on specific animal used in medical laboratory research
- Internet research

SUGGESTED ASSESSMENT METHODS
- Portfolio products may include:
  - Skill sheet
  - Lab report
  - Research paper
  - Photo work sample
- Tests and quizzes

LEARNING STRAND

7.0 Companion Animal Management
- Approximately 8 weeks

ENDURING UNDERSTANDING(S)
- Successful animal managers must be skilled in the areas of: animal health and management, sanitation, and business and management.

ESSENTIAL QUESTION(S)
- What do animal managers and/or employees need to know to be successful?
- What skills or training should an animal manager provide new employees with little experience?
- What physical requirements should be considered when designing an animal facility and enclosures?
- What business management skills are necessary when running a successful animal facility?

LEARNING OBJECTIVES – The students will:

7.1 Identify companion and exotic animals by species and breed, including:
- Dogs
- Cats
- Pocket Pets
- Rabbits
- Birds
- Reptiles & Amphibians
- Tropical Fish

7.2 Develop a set of exotic animal handling skills for safety of animal and handler

7.3 Construct effective enclosures, caging and tanks for school companion animals

7.4 Compare and contrast effective sales techniques

7.5 Develop and use record keeping protocols

7.6 Use effective client relationship skills

7.7 Examine ethics, laws and principles related to animal sales and service

7.8 Develop and demonstrate telephone courtesy skills

7.9 List and demonstrate the use of grooming tools and equipment

7.10 Demonstrate basic grooming skills:
- Nail care
- Eye and ear care
- Shampooing
- Blow drying
- Brushing
- Basic clips and trims

INSTRUCTIONAL SUPPORT MATERIALS
- *Kennels and Kenneling*: *A Guide for Hobbyists and Professionals*, Joel M. McMains (Wiley, John & Sons, Inc.)
- *All about Dog Daycare: A Blueprint for Success,* Robin Knepp Bennett (C&R Publishing, LLC)
- *Business Guide to Pet Grooming***,** Sam Kohl (Aaronco)
- *Building, Buying and Operating a Boarding Kennel,* Jim Krack (ABKA)
- *Commercial Pet Care Facility Design,* Jim Krack (ABKA)

SUGGESTED INSTRUCTIONAL STRATEGIES
- Model safe & effective animal handling techniques
- Model effective customer skills
- Model effective sales techniques
- Construct and maintain school lab animal enclosures
- Evaluate local pet management facilities
- Create a pet care facility design
- Develop a business plan

SUGGESTED ASSESSMENT METHODS
- Portfolio products include:
  - Skill sheet
  - Facility design
  - Business plan
  - Photographs of constructed enclosures

7.11 Compare and contrast companion animal facilities and environments 7.12 Design a companion animal facility 7.13 Develop a plan for facility sanitation and pest control 7.14 Prepare a business plan for companion animal facility	• Tests and quizzes • Observation of skills by teacher