Wallingford Public Schools - HIGH SCHOOL COURSE OUTLINE

Course Title: Wildlife Biology 3	**Course Number**: 8393
Department: Agricultural Education	**Grade(s)**: 11
Level(s): Academic	**Credit(s)**: 1.5

Course Description

Junior year course work continues to build a foundation for students interested in wildlife biology. Topics studied include: entomology, furniture construction, preparation for interviewing, wildlife habitat and fisheries science 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 further develop skills to prepare for future careers in wildlife biology.

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.
- Insects provide the opportunity to study an organism which has survived for millions of years by successfully adapting to environmental changes.
- The relationship between organisms and their ecosystem affect their ability to survive.
- Human impact on an ecosystem (perceived as positive or negative) affects the system's chemical, biological, and physical elements in a multifaceted manner.
- Skilled and safe use of materials and equipment will results in quality construction and a satisfied client or employer.
- Successful preparation for the interview process and the ability to present yourself professionally will set you apart from other applicants.
- Wildlife habitat management is a delicate balance of management skills required to provide critical habitat components necessary for species survival.
- The relationship between the management of watersheds and the biological and chemical properties of a stream determine stream fish production.

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,

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

participating in meetings, gaining 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 Entomology
- Approximately 4 weeks

ENDURING UNDERSTANDING(S)
- Insects provide the opportunity to study an organism which has survived for millions of years by successfully adapting to environmental changes.
- The relationship between organisms and their ecosystem affect their ability to survive.
- Human impact on an ecosystem (perceived as positive or negative) affects the systems chemical, biological, and physical elements in a multifaceted manner.

ESSENTIAL QUESTION(S)
- How does the structure and behavior of insects enable them to survive?
- How do insects survive when their environment changes?
- What are the benefits of insects?
- What are the disadvantages of insects in our environment?
- How are insects controlled?

LEARNING OBJECTIVES The students will:
- 2.1 Identify the common structures of insects.
- 2.2 Explain how insects have an economic impact on Connecticut agriculture.
- 2.3 Describe how insects feed on plants.
- 2.4 List ways insects cause losses in plants.
- 2.5 List beneficial effects of insects.
- 2.6 Summarize tree species pests and the damage they cause.
- 2.7 List cultural, biological and chemical control practices for insects.
- 2.8 Describe a model IPM program for a Connecticut agricultural crop.
- 2.9 Develop a position on chemical vs. organic controls of insects.

INSTRUCTIONAL SUPPORT MATERIALS
- *Butterflies and Moths*, Golden Press, 1964.
- *A Field Guide to the Insects,* Houghton Mifflin Company, 1970.
- *Diagnosing Injury to Eastern Forest Trees,* Penn State College of Agricultural Sciences, 1987.
- *Eastern Moths,* Houghton Mifflin, 1984.
- *Eastern Butterflies,* Houghton Mifflin, 1998.
- *Butterflies of North America,* Houghton Mifflin, 2003.
- *Plant Pest Handbook*, Connecticut Agricultural Experiment Station, 1956.
- Storage boxes
- Insect capture nets
- Collecting jars
- Insect pins
- Field trips to appropriate collecting sites

SUGGESTED INSTRUCTIONAL STRATEGIES
- Model insect pinning techniques
- Model insect identification techniques
- Prepare a flyer for the homeowner on how to identify commonly found insects
- Collect, identify and mount Connecticut insects which meet the following criteria:
  - 4 Hymenoptera
  - 2 Orthoptera

	• 4 Lepidoptera • 4 Coleoptera • 4 Diptera • 2 Hemiptera • 2 Homoptera • 10 Forest pests • 5 Farm pests • 5 Wild insects • 5 Beneficial insects • 2 Human pests • Prepare an information card of each of the insects collected • Complete a position paper on chemical vs. organic control of insects **SUGGESTED ASSESSMENT METHODS** • Portfolio products include • Skill sheet • Position paper • Photograph of insect collection • Rubric of insect collection • Flyer on homeowner information • Test and quizzes • Insect collection • Field information sheet

LEARNING STRAND

3.0 Furniture Construction
- Approximately 8 weeks

ENDURING UNDERSTANDING(S)
- Skilled and safe use of materials and equipment will result in quality construction and a satisfied client or employer.

ESSENTIAL QUESTION(S)
- What safety precautions must be used in a shop setting?
- How are different tools used to cut and finish wood?
- What does a high quality wood project look like?

LEARNING OBJECTIVES – The students will:

3.1 Recognize and follow shop safety guidelines.

3.2 Demonstrate appropriate and safe use of woodworking tools including a:
- Table saw
- Jointer
- Hand router and router table
- Planer
- Band saw
- Hand drills and appropriate bits
- Etc.

3.3 Select appropriate lumber for a furniture construction project.

3.4 Interpret a drawing to construct a furniture construction project.
- Read a bill of materials
- Measure and cut boards to dimensions
- Assemble a project with adhesive and fasteners
- Prepare a wood project to apply a finish
- Apply a finish

3.5 Accurately measure project pieces.

3.6 Perform mathematical computations (board footage and cost of materials).

3.7 Construct a multi-step furniture project such as a:
- Dresser
- Chimney cabinet
- Chest

3.8 Critique woodworking techniques.

INSTRUCTIONAL SUPPORT MATERIALS
- Band saw and table saw
- Sliding compound miter saw
- Jointer
- Surface planer
- Sanders
- Glue
- Project lumber
- Appropriate safety equipment and attire
- Wood project plans
- Cleaning supplies

SUGGESTED INSTRUCTIONAL STRATEGIES
- Review and post safety rules
- Identify woodworking tools and equipment
- Model safe and appropriate techniques when using tools and equipment
- Assist students with demonstrating proficiency with tools
- Discuss how to select lumber for a project
- Measure lumber requirements
- Cut lumber to measured distances
- Select fasteners for project
- Assemble project
- Finish project
- Calculate cost of building project
- Writing assignment – procedural writing explaining how to construct a wood project correctly
- Peer assistance

SUGGESTED ASSESSMENT METHODS
- Project checklists
- Teacher observation of techniques
- Sample wood projects

	• Portfolio products include:
	  • Skill sheet
	  • Work sample picture and caption
	  • Writing assignment

LEARNING STRAND

4.0 School to Career Preparation – Interviewing
- Approximately 4 weeks

ENDURING UNDERSTANDING(S)
- Successful preparation for the interview process and the ability to present yourself professionally will set you apart from other applicants.

ESSENTIAL QUESTION(S)
- Why should I prepare for the interview?
- How can I prepare for an interview?
- What do I need to consider to be successful during the interview?
- What do I need to do after the interview?

LEARNING OBJECTIVES – The students will:

Getting Ready for the Job Interview

4.1 Write a resume that highlights transferable skills and technical skills related to a specific job and document these skills with artifacts from their portfolio.

4.2 Write a business letter using the correct format which adheres to Standard English conventions.
- Cover letter introducing student to a potential employer
- Thank you letter for interview
- Acceptance or rejection letter for position offered

4.3 Compile a list of three references and contact information.

4.4 Complete a mock job application accurately to emphasize your positive attributes.

4.5 Demonstrate preparation skills related to interviewing. Such as:
- Predict what type of questions will be asked
- Warm-up skills/small talk
- Dress for success/grooming
- How to handle illegal questions
- Company research

4.6 Demonstrate appropriate skills during a mock interview. Such as:
- Non-verbal communication skills
  - Eye contact
  - Positive attitude
  - Hand shake
- Verbal skills
  - Voice, diction, grammar
  - Convincing skills presentation
  - Respond to criticism or questions

INSTRUCTIONAL SUPPORT MATERIALS
- Videos on writing a resume, cover letters, etc.
- Videos on interviewing
- Sample resumes, cover letters, references
- Assorted job applications

SUGGESTED INSTRUCTIONAL STRATEGIES
- Discuss model resumes and how the different designs highlight different strengths of the applicant
- Discuss the organization and visual presentation of resumes
- Know my skills activity – brainstorm, list and categorize personal skills, technical skills and work experience – then find artifacts in their portfolios to “prove” these skills
- Brainstorm and discuss characteristics of potential references
- Encourage students to contact references prior to using their name on an application
- Role play during practice mock interviews
- Human resource representative from a local company can assist with mock interviews
- Discuss employer expectations for a variety of jobs

SUGGESTED ASSESSMENT METHODS
- Mock interview rubric
- Resume rubric
- Business letter rubric
- Group participation
- Skills checklist
- Portfolio products may include:
  - Resume and cover letter
  - Mock job application and references

• Explaining strengths and weaknesses
  ○ Provide concrete examples
  ○ Positive spin on weaknesses to improve
• Ask appropriate and pertinent questions
• Comes prepared with needed materials
  ○ Application
  ○ Resume
  ○ References
  ○ Pen, pad of paper and folder
  ○ Examples from portfolio
• Closing statement and thank you
4.7 Evaluate the pros and cons of the position presented to you. Evaluate specifics of the employment such as:
• Salary
• Benefits
• Hours
• Vacation
• Working conditions
• Opportunities for advancement
• Lifestyle needs
 	
<u>Note:</u>
Employment and other related experiences outside of the classroom can be applied towards the SAE (Supervised Agricultural Experience) requirements.
	• Thank you letter to interviewer
	• Acceptance or rejection letter for position offered
	• Photo of student dressed for interview

LEARNING STRAND

5.0 Wildlife Habitat
- Approximately 4 weeks

ENDURING UNDERSTANDING(S)
- Habitat management is a delicate balance of management skills required to provide critical habitat components necessary for species survival.

ESSENTIAL QUESTION(S)
- What components are necessary for animal species to be successful?
- How does plant succession equate to animal population survival?
- What habitat practices influence animal survival?
- What are the benefits of proper land stewardship?

LEARNING OBJECTIVES – The students will:

5.1 Define terminology including:
- Migration corridors
- Indigenous species
- Fragmentation
- Micro-habitat
- Macro-habitat

5.2 Define habitat components required of:
- Deciduous woodland species
- Coniferous woodland species

5.3 Identify specific requirements of twenty Connecticut wildlife species.

5.3 Identify components of a suitable habitat such as:
- Breeding habitat
- Travel habitat
- Resting habitat
- Roosting habitat
- Feeding habitat

5.4 Explain sampling methods to assess habitat quality.

5.5 Evaluate a designated site for critical habitat components.

5.6 Construct a management plan to protect and improve critical habitat components.

5.7 Develop a position on management recommendations to a landowner.

INSTRUCTIONAL SUPPORT MATERIALS
- *Wildlife Restoration,* Island Press, 2002.
- *Landowner's Guide To Wildlife Habitat,* University of Vermont Press, 2005.
- *Monitoring Plant and Animal Populations,* Blackwell Science, Inc. 2001.
- Pantagraph
- Topographic map
- *Kingsbury Report*, Yale University, 1999.
- *Wildlife Investigational Techniques*, Wildlife Society, 2005.
- *Research and Management Techniques for Wildlife and Habitats*, Wildlife Society*, 1995.*

SUGGESTED INSTRUCTIONAL STRATEGIES
- Prepare a habitat requirement workbook of twenty Wallingford species
- Evaluate Wallingford's Tyler Mill Open Space area denoting terminology and habitat requirements of local species.
- Create a map and designate habitat types
- Monitor animal populations in different habitats
- Collect, identify and complete a fact sheet on twenty forbs indigenous to the study area
- Prepare a position paper on the management of open space properties

SUGGESTED ASSESSMENT METHODS
- Portfolio products include
  - Skill sheet
  - Position paper
  - Class worksheets

	• Collection rubrics • Habitat workbook • Descriptive map • Project checklists

LEARNING STRAND

6.0 Fisheries Science Management
- Approximately 4 weeks

ENDURING UNDERSTANDING(S)
- The relationship between the management of watersheds and the biological and chemical properties of a stream determine stream fish production.

ESSENTIAL QUESTION(S)
- What impact does watershed management have on the flora and fauna of a stream?
- What physical, chemical and biological factors must be present for fish to survive and reproduce in a stream?
- What management practices improve fish population survival?
- What techniques are used to measure stream suitability for fish survival?

LEARNING OBJECTIVES – The students will:

6.1 Determine watershed characteristics of a stream such as:
- Stream organisms
- Chemical properties
- Parts of a stream
- Flow behavior

6.2 Develop a site map including:
- Stream boundaries
- Flow patterns
- Bottom type
- Food producing areas
- Breeding areas

6.3 Analyze stream for possible improvement Projects.

6.4 Select plants to enhance stream bank stability.

6.5 Compare biological, chemical, and physical attributes of two dissimilar stream.

6.6 Prepare a position paper to improve critical habitat requirements of macroinvertebrates.

INSTRUCTIONAL SUPPORT MATERIALS
- *Trout Stream Therapy*, University of Wisconsin Press, 1993.
- *A Handbook for Stream Enhancement and Stewardship,* Izaak Walton League of America, 2006.
- *The River Book,* Connecticut DEP, 1998.
- *Methods in Stream Ecology, Elsevier, 2006.*
- *Freshwater Fishery Biology,* WM C. Brown, Co., 1956.
- *Freshwater Fishes of Connecticut,* Connecticut DEP, 1968.
- Hach water test kits
- *Aquatic Entomology*, Jones and Bartlett Publishers, 1981.
- *Community & Evolutionary Ecology of North American Stream Fishes,* University of Oklahoma Press, 1987.
- *www.iwla.org/sos/resources* (map assistance and select plants for stream bank improvement)
- Topographic maps
- Staff compass, Jacob staff, field book, fiberglass tape
- Field trips to Muddy River and Wharton Brook, Wallingford
- Save Our Stream at http://www.iwla.org/publications/watersheds/01_sosdatasheet.pdf

	SUGGESTED INSTRUCTIONAL STRATEGIES
	• Model watershed assessment techniques
	• Evaluate Muddy River watershed
	• Survey a section of Muddy River
	• Draw and label a section of Muddy River
	• Create an overlay of stream and stream bank improvements
	• Stream Channel Stability Assessment
	• Evaluate stream enhancement success
	
	SUGGESTED ASSESSMENT METHODS
	• Portfolio products may include:
	  • Skill sheet
	  • Position Paper
	• Stream site map and stream improvements
	• Stream food collection
	• Chemical analysis of water