

# Warren County School District

## PLANNED INSTRUCTION

### COURSE DESCRIPTION

**Course Title:** Entomology

**Course Number:** 00315

**Course Prerequisites:** \_\_\_\_\_

**Course Description:** (Include “no final exam” or “final exam required”)

Entomology is a one semester elective course open to all students, grades 9 through 12. The course will explore the fascinating world of insects. Topics covered include: insect origins, external and internal anatomy and physiology of insects, insect behavior, insect classification and how insects impact human life and ecosystems. Students will create an insect collection, classifying insects to the family level.

**Suggested Grade Level:** Grades 9-12

**Length of Course:**   X   One Semester        Two Semesters        Other  
(Describe)

**Units of Credit:**       .5       (Insert **NONE** if appropriate.)

**PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certification(s)**

(Insert certificate title and CSPG#) Biology

**Certification verified by WCSD Human Resources Department:**

  X   Yes        No

**Board Approved Textbooks, Software, Materials:**

**Title:**

**Publisher:**

**ISBN #:**

**Copyright Date:**

**Date of WCSD Board Approval:**

**BOARD APPROVAL:**

**Date Written:**        September 2009

**Date Approved:**        \_\_\_\_\_

**Implementation Year:**        \_\_\_\_\_

**Suggested Supplemental Materials:** (List or insert None)

### **Course Standards**

**PA Academic Standards:** (List by Number and Description)

#### **3.2 Inquiry and Design**

10.A Apply knowledge and understanding about the nature of scientific and technological knowledge.

10.B Apply process knowledge and organize scientific technological phenomena in varied ways.

#### **3.3 Biological Sciences**

10.A Explain the structural and functional similarities and differences found among living things.

12.B Analyze the chemical and structural basis of living organisms.

#### **4.7 Threatened, Endangered and Extinct Species**

10.A Explain the significance of biodiversity in the ecosystem.

**WCSD Academic Standards:** (List or None)

None

**Industry or Other Standards:** (List, Identify Source or None)

None

### **WCSD EXPECTATIONS**

WCSD K-12 Expectations for instruction in writing, reading, mathematics and, technology have been developed and revised annually. The teacher will integrate all WCSD Expectations into this planned instruction.

### **SPECIAL EDUCATION AND GIFTED REQUIREMENTS**

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP) or Gifted Individual Education Plan (GIEP).

## SPECIFIC EDUCATIONAL OBJECTIVES/CORRESPONDING STANDARDS AND ELIGIBLE CONTENT WHERE APPLICABLE

(List Objectives, PA Standards #'s, Other Standards (see samples at end))

### S11.A The Nature of Science

#### S11.A.1 Reasoning and Analysis

S11.A.1.1 Analyze and explain the nature of science in the search for understanding the natural world and its connection to technological systems.

#### PA Standards References: 3.2.10.A

		X – performance assessed during that semester		
	Performance Indicators	1	2	Assessment
A.	<b>S11.A.1.1.4</b> Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton's universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur's germ theory, relativity, heliocentric theory, ideal gas laws).			

S11.A.1.2 Identify and analyze the scientific or technological challenges of societal issues; propose possible solutions and discuss implications.

#### PA Standard References: 3.2.10.A

		X – performance assessed during that semester		
	Performance Indicators	1	2	Assessment
A.	<b>S11.A.1.2.1</b> Explain and explain scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).			

### S11.A.2 Processes, Procedures and Tools of Scientific Investigations

S11.A.2.1 Apply knowledge of scientific investigation or technological design to develop or critique aspects of the experimental or design process.

#### PA Standard References: 3.2.10.B

		X – performance assessed during that semester		
	Performance Indicators	1	2	Assessment
A.	<b>S11.A.2.1.1</b> Critique the elements of an experimental design (e.g., raising questions, formulating hypotheses, developing procedures, identifying variables, manipulating variables, interpreting data, and drawing conclusions) applicable to a specific experimental design.			
B.	<b>S11.A.2.1.3</b> Use data to make inferences and predictions, or to draw conclusions, demonstrating understanding of experimental limits.			

### S11.A.3 Systems, Models and Patterns

S11.A.3.3 Compare and analyze repeated processes or recurring elements in patterns.

#### PA Standard References: 3.2.10.B

		X – performance assessed during that semester		
	Performance Indicators	1	2	Assessment
A.	<b>S11.A.3.3.1</b> Describe or interpret recurring patterns that form the basis of biological classification, chemical periodicity, geological order, or astronomical order.			

## S11.B. Biological Sciences

## S11.B.1 Structure and Function of Organisms

S11.B.1.1 Explain structure and function at multiple levels of organization.

**PA Standard Reference: 3.3.10.A, 3.3.12.B**

		X – performance assessed during that semester		
	Performance Indicators	1	2	Assessment
A.	<b>S11.B.1.1.1</b> Explain how structure determines function at multiple levels of organization (e.g., chemical, cellular, anatomical).			
B.	<b>S11.B.1.1.2</b> Compare and contrast the structural and functional similarities and differences among living things (e.g., classify organisms into existing classification groups, compare systems).			

## S11.B.3 Ecological Behavior and Systems

S11.B.3.2 Analyze patterns of change in natural or human-made systems over time.

**PA Standard Reference: 4.7.10A**

		X – performance assessed during that semester		
	Performance Indicators	1	2	Assessment
A.	<b>S11.B.3.2.</b> Use evidence to explain how cyclical patterns in population dynamics affect natural systems.			
B.	<b>S11.B.3.2.2</b> Explain biological diversity as an indicator of a healthy environment.			

## ASSESSMENTS

**PSSA Assessment Anchors Addressed:** The teacher must be knowledgeable of the PDE Assessment Anchors and/or Eligible Content and incorporate them into this planned instruction. Current assessment anchors can be found at [pde@state.pa.us](mailto:pde@state.pa.us).

**Suggested Formative Assessments:** The teacher will develop and use standards-based assessments throughout the course.

- Pre-Assessments of prior knowledge (e.g. entrance cards or KWL chart)
- Labs/lab reports
- Bell ringers/Problems of the Day(PODs)
- Discussions
- Teacher observation/Questioning
- Graphic organizers (e.g. Venn diagrams, word mapping, webbing, KWL chart, etc.)
- Summarizing
- Retelling
- Notetaking
- Problem-based learning modules
- Authentic assessment
- Oral presentations
- Outlining
- Journaling
- Student presentations/projects
- Open-ended response
- Quizzes/tests
- Activities
- Classroom Performance System (CPS)

- White boards

### **Suggested Summative Assessments:**

- Essays
- Open-Ended Responses
- Projects
- Quizzes/tests
- Student presentations
- Portfolios
- Lab Practical
- Lab Report

### **District Approved Assessment Instruments**

- PSSA Tests-Grades 4, 8 and 11 only

**Portfolio Assessment:**        \_\_\_\_\_ Yes      X   No

**District-wide Final Examination Required:**        \_\_\_\_\_ Yes      X   No

**Course Challenge Assessment (Describe):**

### **REQUIRED COURSE SEQUENCE AND TIMELINE**

(Content must be tied to objectives)

Content Sequence	Dates
I. Insect Collection	<b>5 weeks</b>
A. Collecting Techniques	
B. Pinning and Labeling	
C. Organization of Collection	
D. Identifying Insects to Family	
II. Insect Origins	<b>1.5 weeks</b>
A. Evolutionary History	
B. Characteristics of Closely Related Arthropods	
III. External Anatomy	<b>3 weeks</b>
A. Major Parts of the Insect Body	
B. Mouthparts	
C. Parts of the Legs	
D. Wing Venation and Wings	
E. Exoskeleton	
IV. Internal Anatomy	<b>2.5 weeks</b>
A. Respiratory System	
B. Nervous System	
C. Circulatory System	

- D. Digestive System
- E. Reproductive System
- V. Insect Orders **6 weeks**
  - A. Classification
  - B. Life Cycles
  - C. Behavior
  - D. Impact of Insect Species on Humans
  - E. Impact of Insect Species on Ecosystems

**Objectives:**

1. Collect, pin and label insects.
2. Use a dichotomous key to correctly key insects to order and family levels.
3. Create a logically organized insect collection.
4. Explain how insects evolved.
5. Analyze the structure and function of insect anatomy.
6. Describe the factors that make the Class Insecta so successful.
7. Classify insects.
8. Differentiate between primitive and advanced anatomical and behavioral characteristics among insects.
9. Explain how insects impact human life and ecosystems.

**WRITING TEAM:** Tina Toole

**WCSD STUDENT DATA SYSTEM INFORMATION**

1. Is there a required final examination? ☒ Yes ☐ No
2. Does this course issue a mark/grade for the report card?  
☒ Yes ☐ No
3. Does this course issue a Pass/Fail mark? ☐ Yes ☒ No
4. Is the course mark/grade part of the GPA calculation?  
☒ Yes ☐ No
5. Is the course eligible for Honor Roll calculation? ☒ Yes ☐ No
6. What is the academic weight of the course?  
☐ No weight/Non credit ☒ Standard weight  
☐ Enhanced weight (Describe)