

**Unit # - 4 – Animals: Invertebrates and Vertebrates; Their Structure, Functions, and Behaviors**

Standards Addressed	Student Learning Objectives for this Unit	Content Skills and Knowledge	Learning Activities and Instructional Strategies
<p>NSES Standards:            * Structure &amp; Function in Living Systems            * Regulation and Behavior            * Diversity &amp; Adaptations</p> <p>PA STEE Standards:            3.1.7.A sim syst            3.1.7.E chng var            3.2.7.B inter obs            3.3.7.A str fct liv            3.3.7.B cell            4.7.7.A diversity            4.7.7.B adapt</p> <p>1.2 read crit            1.4 writing            1.6 spk lst            1.8 research</p>	<p>Students will be able to ...</p> <p>Part 1</p> <p>A. Explain the characteristic behavior of animals.            B. Explain the structure and function involved in the following behaviors:</p> <ul style="list-style-type: none"> <li>▪ Movement, Digestion, Reproduction, Respiration</li> <li>▪ Circulation, Brain Function</li> </ul> <p>C. Understand the previously cited behaviors in <b>unicellular</b>, animal like protists (ex. Paramecium, Blepharisma, or Amoebas).            D. Describe the behaviors stated previously among <b>multi-cellular</b> invertebrates and vertebrates.</p> <p>Part 2</p> <p>E. Compare and contrast the major function and structure of the following <b>invertebrates</b>.</p> <ul style="list-style-type: none"> <li>a. Sponges</li> <li>b. Cnidarians</li> <li>c. Flatworms</li> <li>d. Roundworms</li> <li>e. Mollusks</li> <li>f. Annelid worms</li> <li>g. Arthropods</li> <li>h. Echinoderms</li> </ul> <p>F. Analyze and compare the function and structure of the following <b>vertebrates</b>.</p> <ul style="list-style-type: none"> <li>a. Fish</li> <li>b. Amphibians</li> <li>c. Reptiles</li> <li>d. Birds</li> <li>e. Mammals</li> </ul> <p>G. Correlate systems of support, digestion, movement, circulation, and respiration for vertebrates and invertebrates.</p>	<p>Part 1</p> <ul style="list-style-type: none"> <li>▪ Vertebrate, invertebrate, embryo, tissue, organ, consumer</li> <li>▪ Innate behavior, learned behavior, hibernation, estivation, circadian rhythm</li> <li>▪ Social behavior, communication, pheromone</li> </ul> <p>Part 2:E</p> <ul style="list-style-type: none"> <li>▪ Bilateral symmetry, radial symmetry, asymmetrical, ganglia, gut, coelem (E:abcd)</li> <li>▪ Open and closed circulatory system, segment (E:e,f)</li> <li>▪ Exoskeleton, compound eye, antennae, mandible (E:g)</li> <li>▪ Endoskeleton (E:h)</li> </ul> <p>Part 2:F</p> <ul style="list-style-type: none"> <li>▪ Vertebrae, endotherm, ectotherm (F)</li> <li>▪ Lateral line, gills, denticles, swim bladder (F:a)</li> <li>▪ Lung, tadpole (F:b)</li> <li>▪ Therapsid, amniotic egg (F:c)</li> <li>▪ Down feather, contour feather, preening, lift (F:d)</li> <li>▪ Mammary glands, diaphragm, monotreme, marsupial, gestation (F:e)</li> </ul> <p>Skills</p> <ul style="list-style-type: none"> <li>▪ Students will learn and use the compound microscope to study representative protists.</li> <li>▪ Students will dissect ONE representative animal. (ex. Perch, squid, frog, worm, or starfish)</li> <li>▪ Students will research one representative vertebrate or invertebrate</li> </ul>	<p>Part 1</p> <p><b>Lab or Demonstration:</b>            Animal Interviews (PH)  <b>Reading:</b>            What is an Animal? (PH)            Symmetry (PH)            What is a Vertebrate (PH)  <b>Worksheet:</b>            What Makes an Animal? (H)            Radial or Bilateral? (PH)</p> <p>Part 2</p> <p><b>Lab or Demonstration:</b>            Earthworm Responses (PH)            Dissection Handouts for Perch, squid, frog, worm and starfish  <b>Reading:</b>            Sponges and Cnidarians (PH)            Worms (PH) Mollusks (PH)            Arthropods (PH) Insects (PH)            Echinoderms (PH) Fishes (PH)            Amphibians (PH) Reptiles (PH)            Birds (PH) What is a Mammal? (PH)  <b>Worksheet:</b>            The Mighty Worm (PH)            The Physics of Flight (PH)  <b>Technology:</b>            Froguts.com  <a href="http://www.froguts.com/">http://www.froguts.com/</a>            Perch or Crayfish Dissection  <a href="http://www.tryscience.org/experiments/experiments_surgery_online.html">http://www.tryscience.org/experiments/experiments_surgery_online.html</a>  <a href="#">1</a></p>

## Unit # - 4 - Animals

### Unit Modifications

Part 2:  
 Sponges and Cnidarians (PH)  
 Worms (PH)  
 Mollusks (PH)  
 Arthropods (PH)  
 Insects (PH)  
 Echinoderms (PH)

### Unit Enrichments

Part1  
 Radial or Bilateral? (PH)

Part 2  
 Correlative illustrations of support, digestion, movement, circulation, and respiration from *The Zoology Coloring Book*.

### Suggested Assessment Techniques for Unit

Core 3: Animals Unit Common Standards Assessment  
 (district common)

### Materials/Technology for Unit

Froguts.com  
<http://www.froguts.com/>

Perch or Crayfish Dissection  
[http://www.tryscience.org/experiments/experiments\\_surgery\\_online.html](http://www.tryscience.org/experiments/experiments_surgery_online.html)