

## Wilson Area School District Planned Course Guide

**Title of planned course:** Zoology

**Subject Area:** Science

**Grade Level:** 12

**Course Description:** Zoology is a rigorous, senior level course in which students will examine the general characteristics, structures, functions, and evolutionary connections of and between a variety of animals including invertebrate and vertebrate species. Animals including sponges, cnidarians, worms, mollusks, arthropods, echinoderms, fish, amphibians, reptiles, birds, and mammals will be studied. Course work may include note taking, tests, dissections, labs, and projects. Dissections of the earthworm, squid, sea star, and frog will occur.

**Time/Credit for this Course:** Half Year / 0.5 Credit

**Curriculum Writing Committee:** Jen Burd

## Wilson Area School District Planned Course Materials

**Course Title:** Zoology

**Textbook:**

Biology  
Pearson (Kenneth Miller/Joseph Levine)  
2004, 2010 editions will be used

**Supplemental Books:**

The Encyclopedia of Animals (Christiansen)  
Biology of Animals (6<sup>th</sup> edition, Hickman/Roberts)  
Mammalogy (6<sup>th</sup> edition, Vaughn)

**Teacher Resources:**

Slideshow presentations  
Other ancillary materials

# Curriculum Map

## **Weeks 1 & 2:**

An Introduction to Zoology

## **Weeks 3 & 4:**

Sponges  
Cnidarians

## **Weeks 5 & 6:**

Worms  
Earthworm Dissection

## **Weeks 7 & 8:**

Mollusks  
Squid Dissection

## **Weeks 9 & 10:**

Arthropods  
Echinoderms

## **Weeks 11 & 12:**

Echinoderms  
Sea Star Dissection  
Fish

## **Weeks 13 & 14:**

Amphibians  
Frog Dissection

## **Weeks 15 & 16:**

Reptiles  
Birds

## **Weeks 17 & 18:**

Mammals  
Review for Final Exam

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** An Introduction to Zoology

**Time frame:** 2 - 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.1.1, BIO.A.1.2.1 BIO.A.1.2.2

**Essential content/objectives:** At end of the unit, students will be able to:

- List characteristics that all living organisms share
- Identify groups of living things
- Describe what makes an animal an animal
- Explain embryonic development, types of body symmetry, and body cavity formation in animals
- Differentiate between simple and complex animals
- Discuss essential functions of all animals
- Explain Linnaeus' system of classification

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Introduction to Zoology slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Body Symmetry lab activity
- Key Vocabulary – archaea, bacteria, eukarya, multicellular, heterotrophic, endoderm, mesoderm, ectoderm, blastula, gastrulation, protostome, deuterostome, radial, bilateral, cephalization, acoelomate, pseudocoelomate, coelomate
- Animal babies and collectives activities
- “Animal Fun Facts” trivia

**Extensions:**

- Peer tutoring
- Practice using dichotomous keys
- “What is Life?” Lab
- Shape of Life DVD
- “The Crazy Colors of Blood” discussion

**Remediation:**

- Peer tutoring
- Classification of common objects activity

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Introduction to Zoology slideshow
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Introduction to Zoology test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Sponges

**Time frame:** 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1, BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Explain why sponges are classified as animals
- Differentiate the 3 classes of sponges
- Label the parts of the sponge and identify functions of those parts
- Describe how sponges carry out essential life procedures
- Describe filter feeding

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Sponges slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Key vocabulary – choanocyte, osculum, spicule, archaeocyte, gemmule
- Sea sponge vs. synthetic sponge demonstration
- “Do Invertebrates feel Pain?” article and discussion
- Sponges as the First Animals - the need for oxygen article and discussion
- Specimens discussion

**Extensions:**

- Peer tutoring
- Sponge slide lab
- Shape of Life dvd

**Remediation:** Peer tutoring

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Sponges slideshow
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Sponges test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Cnidarians

**Time frame:** 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1, BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Identify 4 groups of cnidarians
- Describe two types of cnidarian body plans
- Label hydra anatomy and conduct hydra lab
- Describe how cnidarians carry out essential life functions

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Cnidarians slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Hydra and daphnia lab
- Key Vocabulary – cnidocyte, nematocyst, polyp, medusa, gastrovascular cavity, nerve net, hydrostatic skeleton
- Complexity of sponges vs. cnidarians
- Coral bleaching article and discussion
- Specimens discussion

**Extensions:**

- Peer tutoring
- Cnidarian slide lab
- Shape of Life dvd

**Remediation:** Peer tutoring

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Cnidarians slideshow
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Cnidarians test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Worms

**Time frame:** 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1, BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Identify defining features of flatworms, roundworms, and annelids
- Explain characteristics of flatworms, roundworms, and annelids
- Describe the parasitic relationship between common roundworms and humans

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Worms slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Key Vocabulary – acoelomate, coelom, pharynx, flame cell, ganglion, eyespot, scolex, proglottid, pseudocoelom, septum, seta, crop, gizzard, closed circulatory system, nephridium, clitellum
- Live earthworm lab
- Planaria observation and regeneration lab
- Earthworm dissection lab
- Parasitic worms research activity
- Specimens discussion

**Extensions:**

- Peer tutoring
- Tapeworm slide lab
- Shape of Life dvd

**Remediation:** Peer tutoring

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Worms slideshow
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Worms test



# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Mollusks

**Time frame:** 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1, BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Explain defining features of mollusks
- Describe the basic body plan of mollusks
- Describe characteristics of three main classes of mollusks

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Mollusks slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Key vocabulary – trochophore, foot, mantle, shell, visceral mass, radula, siphon, open circulatory system
- Mollusk shell ID lab
- Squid dissection lab
- Specimens discussion

**Extensions:**

- Peer tutoring
- Mollusk shell ID lab
- Shape of Life dvd
- “Inside Nature’s Giants - Giant Squid”

**Remediation:** Peer tutoring

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Mollusks slideshow
- Mollusk shells for ID lab
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Mollusks test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Arthropods

**Time frame:** 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2 – BIO.A.4.2.1 – BIO.B.3.2.1 –BIO.B.4.2.2 –3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Describe the main characteristics of arthropods
- Identify important trends in arthropod evolution
- Explain what happens when an arthropod outgrows its exoskeleton

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Arthropods slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Key vocabulary – exoskeleton, chitin, appendage, tracheal tube, spiracle, book lung, Malpighian tubule, molting
- Extant arthropod research activity
- Spider web drawings and descriptions
- Specimens discussion

**Extensions:**

- Peer tutoring
- Shape of Life dvd
- Build a bug activity
- Characteristics of arthropods table
- Genetic engineering and commercial use of spider silk article and activity

**Remediation:** Peer tutoring

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Arthropods slideshow
- Shape of Life dvd

**Assessments:**

- Warm-ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Arthropods test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Echinoderms

**Time frame:** 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1, BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Describe distinguishing features of echinoderms
- Explain life functions carried out by the water vascular system of echinoderms
- Identify the different classes of echinoderms

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Echinoderms slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Key vocabulary – endoskeleton, water vascular system, madreporite, tube foot
- Sea star dissection lab
- Specimens discussion

**Extensions:**

- Peer tutoring
- Shape of Life dvd

**Remediation:** Peer tutoring

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Echinoderms slideshow
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Echinoderms test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Fish

**Time frame:** 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1 BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Describe the basic characteristics of fish
- Identify the most important developments during the evolution of fish
- Explain how fish are adapted for life in the water
- Identify the three main groups of fish

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Fish slideshow review and class discussion
- Daily Early Burd warm-up activities
- Labeling diagrams
- Key vocabulary – cartilage, atrium, ventricle, cerebrum, cerebellum, medulla oblongata, lateral line system, swim bladder, oviparous, ovoviviparous, viviparous
- Specimens discussion

**Extensions:**

- Peer tutoring
- Shape of Life dvd
- “Inside Nature’s Giants - Great White Shark”
- “The Fish of Finding Nemo” activity

**Remediation:** Peer tutoring

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Fish slideshow
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Fish test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Amphibians

**Time frame:** 5 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1, BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Describe characteristics of amphibians
- Explain how amphibians are adapted for life on land
- Identify the main groups of living amphibians
- Conduct a frog dissection

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Amphibians slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Key vocabulary – cloaca, nictitating membrane, tympanic membrane
- Frog dissection lab
- Specimens discussion

**Extensions:**

- Peer tutoring
- Goliath frog skull study
- Shape of Life dvd

**Remediation:**

- Peer tutoring
- Alternate activity to frog dissection

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Amphibians slideshow
- Frog dissection paperwork
- Goliath frog skull
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Amphibians test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Reptiles

**Time frame:** 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1, BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Describe the characteristics of reptiles
- Explain how reptiles are adapted for life on land
- Identify four living orders of reptiles

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Reptiles slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Key vocabulary – ectotherm, amniotic egg, carapace, plastron
- Specimens discussion

**Extensions:**

- Peer tutoring
- Shape of Life dvd
- American alligator Skull Study
- “Inside Nature’s Giants - Monster Python”

**Remediation:** Peer tutoring

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Reptiles slideshow
- American alligator skull
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Reptiles test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Birds

**Time frame:** 3 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1, BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Describe characteristics that birds have in common
- Explain how birds are adapted for flight

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Birds slideshow review and class discussion
- Daily warm-up activities
- Labeling diagrams
- Key vocabulary – feather, endoderm, crop, gizzard, air sac
- Specimens discussion

**Extensions:**

- Peer tutoring
- Shape of Life dvd
- Owl pellet examination
- Hawk skull study
- “Inside Nature’s Giants - Cassowary”

**Remediation:** Peer tutoring

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Birds slideshow
- Hawk skull
- Shape of Life dvd

**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Birds test

# Curriculum Scope & Sequence

**Planned Course:** Zoology

**Unit:** Mammals

**Time frame:** 5 Blocks

**State Standards / Anchor(s) or adopted anchor:** BIO.A.1.2.2, BIO.A.4.2.1, BIO.B.3.2.1, BIO.B.4.2.2; 3.1.12.A2, A5, A6

**Essential content/objectives:** At end of the unit, students will be able to:

- Describe characteristics of mammals
- Explain when and how mammals evolved
- Describe how mammals maintain homeostasis
- Contrast three main groups of extant mammals
- Compare characteristics of all primates

**Core Activities:** Students will complete/participate in the following:

- Read and take notes on assigned textbook chapter
- Nightly homework assignments
- Mammals slideshow review and class discussion
- Daily Early Burd warm-up activities
- Labeling diagrams
- Key Vocabulary – mammary gland, subcutaneous fat, rumen, diaphragm, cerebral cortex, monotreme, marsupial, placenta, binocular vision, prehensile, bipedal, opposable thumb
- Specimens discussion

**Extensions:**

- Peer tutoring
- Pig Dissection
- Shape of Life dvd
- Chimp vs. Man skull study
- “Inside Nature’s Giants - Lion and Tiger”

**Remediation:**

- Peer tutoring
- Alternate activity to fetal pig dissection

**Instructional Methods:**

- Individual reading and note taking
- Direct instruction with questioning
- Teacher modeling and visual aids
- Whole class and small group discussion

**Materials & Resources:**

- Textbook
- Mammals slideshow
- Chimp skull
- Man skull
- Shape of Life dvd



**Assessments:**

- Warm ups, homework assignments, and class activities
- Class discussion
- Quizzes
- Mammals test