

ORGANISMAL BIOLOGY

Wednesdays, September 11-December 11 (no class October 16 or November 27; 12 weeks)

9:30am-11:00am

Ages 11-14

Throughout this semester, students learn basic classification and taxonomic organization, as well as the biology, ecology and anatomy of protist, invertebrate and vertebrate phyla. In addition, microscopy and dissection techniques are practiced throughout the semester. Although dissections are included in this course, students do not have to actively participate in the dissections if they prefer not to. All lab costs are included in registration fee. Course enrollment is limited to 12 students.

Instructor: Tonya Shearer, PhD

Location: STEM Lab (suite 21)

Course fee: \$275 OR \$25/lab

10% off early registration discount through July 31

10% off sibling discount available beginning August 1

LAB SCHEDULE:

Kingdom Protista – Wednesday, September 11

Using proper microscopic techniques, students study the biology and cellular structure of aquatic protists, including *Amoeba*, *Paramecium*, *Euglena* and *Volvox*.

Phyla Porifera and Cnidaria – Wednesday, September 18

Students investigate sponges, coral, anemones and jellyfish, learn about their ecological roles in their habitats and determine what characteristics are used to classify organisms into these animal phyla.

Phyla Platyhelminthes, Annelida and Nematoda – Wednesday, September 25

This week, we study three groups of worms: flatworms, segmented worms and roundworms. Students learn the characteristics of each group, where they live, and their anatomical differences as we dissect representatives of two worm groups.

Phylum Arthropoda – Wednesday, October 2

We explore the world of insects, crustaceans and other crawling critters with exoskeletons. Students compare living specimens and dissect two preserved arthropods (crayfish and grasshoppers) to observe their similarities and differences.

Phylum Mollusca: Class Bivalvia and Gastropoda – Wednesday, October 9

Students investigate the ecology, biology and anatomy of two diverse classes of molluscs: Bivalvia (clams, mussels and oysters) and Gastropoda (snails and slugs), and compare adaptations for locomotion within this phylum.

Phylum Mollusca: Class Cephalopoda – Wednesday, October 23

In this lab, we study squid and learn the characteristics they share with other members of their phylum. Students have the opportunity to dissect squid and investigate their complex eyes, which are similar in function to human eyes.

Phylum Echinodermata – Wednesday, October 30

We study sea stars, sea urchins and their relatives this week. Students learn about differences in locomotion and feeding strategies within the phylum, and observe their radially symmetrical body plan.

Phylum Chordata: Class Amphibia – Wednesday, November 6

This week, we discuss amphibians and their ecological role in their habitat, as well as dissect a preserved grass frog to study the sensory and organ systems of a vertebrate organism.

Phylum Chordata: Class Osteichthyes – Wednesday, November 13

Students study bony fish to observe anatomical adaptations allowing them to survive in marine and aquatic habitats. Fish dissections allow students to observe adaptations such as gills and the swim bladder.

Phylum Chordata: Class Chondrichthyes – Wednesday, November 20

We use microscopy and observation of preserved sharks to compare and contrast a cartilaginous fish to bony fish, as well as study adaptations of some sharks that allow them to survive in their habitat.

Phylum Chordata: Class Mammalia (nervous and musculoskeletal systems) –
Wednesday, December 4

To investigate mammal nervous and musculoskeletal systems, students investigate preserved sheep brains and microscope slides of mammalian nerve cells, as well as dissect chicken wings to study the anatomy of muscle and bone.

Phylum Chordata: Class Mammalia (circulatory, urinary and digestive systems) –
Wednesday, December 11

In our final week, students study mammalian circulatory, urinary and digestive systems including investigating a mammalian heart, kidney and stomach. We also use microscope slides to study the cellular level of these organs.