

## ECOLOGY LABS

Tuesdays, September 10-December 10 (no class October 15, or November 5 or 26; 11 weeks)

9:30am-11:00am

Ages 11-14

Throughout this semester, students study environmental processes and ecological systems through hands-on activities and experimentation related to the study of organisms and their environment. We explore biodiversity across the plant and animal kingdoms, learn methods to study diversity and behavior, investigate adaptations allowing organisms to thrive in their habitat, and look into abiotic factors influencing ecosystems. All lab costs are included in registration fee. Course enrollment is limited to 12 students.

Instructor: Tina Oresteen, BSc

Location: STEM Lab (suite 21)

Course fee: \$250 OR \$25/lab

10% off early registration discount through July 31

10% off sibling discount available beginning August 1

### LAB SCHEDULE:

#### **Non-Vascular Plants** – Tuesday, September 10

Our introductory week we study moss microhabitats. Students learn why mosses are so small by investigating the structure of gametophytes, observe the diversity of organisms living in a moss habitat, and build their own ecosystem in a jar.

#### **Diversity of Trees** – Tuesday, September 17

We examine different types of trees and identify them based on leaf characteristics, learn how scientists measure tall trees, and estimate the number of trees in a forest. Students also help scientists in a citizen science project by collecting data on local trees.

#### **Flower Adaptations and Pollination** – Tuesday, September 24

Students dissect flowers to investigate how flowers reproduce, and use microscopes to observe adaptive features of pollen of different plant species. We also discuss co-speciation as we study the close relationships between pollinators and the plants they pollinate.

#### **Seeds and Dispersal** – Tuesday, October 1

Gymnosperms and angiosperms both produce seeds. This week we discover how they differ in their anatomy as we dissect fruits and seeds, and observe adaptations related to dispersal mechanisms.

### **Invertebrate Biodiversity** – Tuesday, October 8

Students investigate the wide variety of insects and arachnids, and their importance to the ecosystem, as they dissect decomposing logs, and characterize the creatures they uncover. We also discuss microhabitats as we observe where we find each type of creature on or within the log.

### **Herpetology** – Tuesday, October 22

This week we identify local reptiles and amphibians, and learn about their habitat preferences. We review the differences between native, non-native and invasive species, and how they impact the ecosystem.

### **Avian Biology and Food Webs** – Tuesday, October 29

Students learn how to identify birds, and investigate the ecological role of birds in local food webs. Since “You are what you eat,” students examine the food web of an owl by dissecting owl pellets, and comparing to food preferences of other birds.

### **Aquatic Ecosystems** – Tuesday, November 12

We test samples from nearby water sources to determine the health of the systems through water quality analysis, and identify microscopic organisms inhabiting these aquatic environments.

### **Watershed Management** – Tuesday, November 19

Students study how ecosystems are connected through waterways using an Enviroscape watershed model, learn how pollution can travel long distances, and review the water cycle to visualize patterns in the movement of water molecules across ecosystems.

### **Soil Habitats** – Tuesday, December 3

This week we study the foundation of most environments by studying different types of soils and rocks, determining the composition of soils and what lives in them, as well as conduct an experiment to compare the water retention abilities of different soil types.

### **Ecosystems and Biomes** – Tuesday, December 10

Students review characteristics of ecosystems and biomes throughout the world. We distinguish between weather and climate, and investigate how ecosystems are connected and influence each other.