



Class Title: Blue/ Orange Lego Coding (Ages 9-12)

Teacher Name: Priscila Dolack

Class Day: Monday

Class Size: 10

Class Supply Fee: \$160

Class Fee: \$96

Ages or color group served: Blue/ Orange Ages 9-12

What level is this class: Level 2

Prerequisites: NA

Graduation Requirements: NA

Homework Requirements: NA

Class Description:

In this class, students will explore the fascinating world of Life Science and Physical Science through hands-on Lego building and coding activities. Using Lego Education kits, students will design and construct models to better understand biological concepts like how animals use internal and external structures to survive, grow, and adapt. They will also learn about the movement of energy through ecosystems and natural resources, all while programming their Lego creations to simulate the real-world.

Through coding exercises, students will learn how to apply logical thinking and problem-solving skills to control their Lego models, helping them understand key physical science concepts like motion, light, and energy transfer. As they design, build, and code their projects, they'll not only reinforce their understanding of scientific principles but also develop important skills in teamwork, creativity, and persistence. This



interactive, project-based class integrates science with technology, offering a fun and engaging way to explore the wonders of the natural world.

Week 1:
Habitats

Students will record observations of the types of plants and animals that live in different habitats.

Compare the diversity of life in different habitats.

Build a model that shows important features of a habitat, including the plants and animals that live there.

Week 2:
Pollination

Students will explain how animals help plants spread pollen.

Build an accurate model of the pollination process, with details showing pollen transfer through direct contact with a bird, a bat, or an insect.

Week 3:

Redesigning to make new objects

Students will build a model of a kitchen tool and reassemble its pieces as a second tool.

Use model observations to explain how a set of pieces can be assembled and disassembled to form different objects.

Week 4:

How Eyes See

Students will build an accurate model of a movable light source.

Use the model to describe how light reflects from objects to enter the eyes, allowing the objects to be seen.

Use the model to explain what happens if the light source is blocked or diminished.

Week 5:

Animal Structure



Students will build a model to show how an elephant's trunk supports eating, drinking, bathing, or communicating.

Construct an argument based on evidence from the model that an elephant's external and internal structures help it to survive.

Week 6:

Energy Resource

Students will use research to explain how humans use renewable and non-renewable energy resources from nature.

Use research to describe the positive and negative effects on the environment of using renewable vs. non-renewable resources.

Build a model to show one renewable energy resource.

Week 7:

Prepare for Natural Hazards

Students will design a model for buildings that will reduce the impacts of earthquakes on humans.

Use their model to evaluate the effectiveness of their design solution.

Use several models to compare the effectiveness of two or more design solutions.

Week 8:

Information transfer

Students will design at least two different methods for transferring information using patterns.

Identify criteria and constraints for testing the design solutions.

Evaluate each of their design solutions for speed, accuracy, and ease of use.

Week 9:

Daytime and Nighttime

Students will use provided data to find monthly patterns in the hours of daylight for a location.

Present the data in graphical form.

Create a model of a campsite light that turns on at night and turns off during the day.



Week 10:
GRAVITY

Students will build a device that demonstrates that the gravitational force exerted by Earth pulls objects down, toward Earth's center.

Use the device to explain the bird's behavior in terms of the downward force of gravity.

Week 11:
MATTER:

Students will develop a motorized fan that is able to blow over a paper tower a short distance away.

They will be able to explain that although air particles are too small to see, they are pushed by the fan against the paper to knock it over.

Week 12:
Protection from wind

Students will design their own different solutions to slow or prevent wind from changing the shape of the land.

Build their own model to slow or prevent wind from changing the shape of the land.

Compare multiple class design solutions to slow or prevent wind from changing the shape of the land.