



# School District of Horicon

## Course Outline

### Learning Targets

#### Biology

##### UNIT: Science Process

**Students will know:**

- Critique Spontaneous Generation and analyze why Biogenesis is a better model.
- Analyze the difference between a scientific theory and law vs. social definition.

**Students will be skilled at:**

- Create controlled experiments to prove a hypothesis.
- Apply a mathematical model to convert measurements within and between metric and English systems of measurement.

##### UNIT: Cells

**Students will know:**

- Critique the differences between the kingdoms of living things.
- Design a model to show the steps of cell division.
- Design a model of the cell membrane and how it works.

**Students will be skilled at:**

- Analyze microscopic specimens under a microscope.
- Analyze healthy vs. infected cells.
- Connect cell division to the cells they see.

##### UNIT: Genetics

**Students will know:**

- Analyze Mendel's 3 Laws.
- Connect exceptions to Mendel's Laws with examples.
- Develop a logical argument for the chances of inheriting particular offspring based on traits of the parents.

**Students will be skilled at:**

- Create Punnett squares and pedigree charts to show family traits.
- Analyze traits that you have and determine how you inherited them.
- Prove whether a trait is dominant or recessive or a carrier.

## UNIT: DNA

### ***Students will know:***

- Connect the science and ethics of genetic engineering.
- Model the mutation that causes Down Syndrome.
- Model DNA as the blueprint of how to make an organism and RNA as the creator of the organism.

### ***Students will be skilled at:***

- Create a DNA fingerprint.
- Analyze genetic mutations.
- Model protein synthesis by RNA from the DNA.

## UNIT: Evolution

### ***Students will know:***

- Connect how natural disasters have shaped our landscape and our natural history.
- Analyze the evidence of evolution and how it shows that all organisms are connected.
- Model the doppler effect and red shift to show an expanding universe.
- Critique the different evolution theories.

### ***Students will be skilled at:***

- Develop a logical argument and create a presentation to teach peers.
- Design an activity or demonstration to model a topic.

## UNIT: Classification

### ***Students will know:***

- Draw conclusions about Lineus' taxonomic system.
- Critique the modern classification system and the problems in classifying organisms.

### ***Students will be skilled at:***

- Construct a phylogenetic tree to show how organisms are related.
- Cite evidence to identify an organism with a dichotomous key.

## UNIT: Germ Theory

### ***Students will know:***

- Differentiate between the 3 different symbiotic relationships.
- Connect what you know about contagions to Covid-19 outbreak, AIDS epidemic, and Ebola.

### ***Students will be skilled at:***

- Design a lab that tests the effectiveness of antibacterial products on bacteria you grow from swabs
- Applying concepts to control bacterial infections.

## UNIT: Ecology

### ***Students will know:***

- Analyze the differences between lake, river and marine ecosystems.
- Differentiate between conservation and preservation as methods to protect resources.

### ***Students will be skilled at:***

- Design environmental improvement plans
- Assess environmental conditions to determine the health of an ecosystem
- Analyze mistakes from the past to ensure a better future

*Students will be able to meet the learning targets above as evidenced by formative and summative classroom assessments.*