GRADE 7 SCIENCE

Description

Grade 7 science is a heterogeneous class that meets one period per day. The major topics are: characteristics of living things, structures and interactions of organisms, systems of the human body, and cellular reproduction.

Course Overview

Course Goals

Students should:

Essential Questions

- How do matter and energy flow through ecosystems?
- How are organisms structured to ensure efficiency and survival?
- What processes are responsible for life's unity and diversity?
- How do science and technology affect the quality of our lives?

Assessments

Common Assessments

Skill Assessments

Content Outline

I. Unit 1 - Introduction to Life
II. Unit 2 - Cell Structure and Reproduction
III. Unit 3 - Structures and Interactions of Living Things

Standards

State of Connecticut Science Curriculum Frameworks

Connecticut State Standards are met in the following areas:

- ***Matter and Energy in Ecosystems***
- ***Structure and Function***
- ***Heredity and Evolution***
- ***Science and Technology in Society***

Grade Level Skills

Students will:

-

Pacing Guide										
1st Marking Period			2nd Marking Period			3rd Marking Period			4th Marking Period	
September	October	November	December	January	February	March	April	May	June	
Unit 1 **Introduction to Life** 5 weeks			Unit 2 **Cell Structure and Reproduction** 9 weeks			Unit 3 **Structures and Interactions of Living Things** 20 weeks 3 weeks per body system 1 week inquiry activity 4 weeks enrichment time for additional labs and activities relating to the human body				

Unit 1 - Introduction to Life, 5 weeks top

Standards

Matter and Energy in Ecosystems

An ecosystem is composed of all the populations that are living in a certain space and the physical factors with which they interact.

Students will:

- describe how abiotic factors, such as temperature, water and sunlight, affect the ability of plants to create their own food through photosynthesis.

Unit Objectives

Students will be able to:

- identify characteristics of living things.
- describe factors that affect the survival of living things.

Essential Question

- How do matter and energy flow through ecosystems?

Focus Question

- What are the characteristics of living things and the factors that affect their survival?

Assessment

- Create an Organism Project

Skill Objectives

Students will:

Unit 2 – Cell Structure and Reproduction, 9 weeks top

Standards

Structure and Function

Many organisms, including humans, have specialized organ systems that interact with each other to maintain dynamic internal balance.

Students will:

- describe the basic structures of an animal cell, including nucleus, cytoplasm, mitochondria, and cell membrane, and how they function to support life.

Heredity and Evolution

Reproduction is a characteristic of living systems and it is essential for the continuation of every species.

Students will:

- explain the similarities and differences in cell division in somatic and germ cells.
- describe how genetic information is organized in genes on chromosomes, and explain gender determination in humans.

Unit Objectives

Students will be able to:

- differentiate between animal and plant cells.
- compare the processes of cellular respiration and photosynthesis.
- describe and locate the structures of major organelles in plant and animal cells. including the nucleus, cytoplasm, mitochondria, and cell membrane, and explain their functions.
- outline the processes of mitosis and meiosis.
- explain the role of meiosis in gender determination.
- compare and contrast the functions of mitosis and meiosis.
- distinguish among DNA, genes and chromosomes and describe their interrelationships.

Essential Questions

- How are organisms structured to ensure efficiency and survival?
- What processes are responsible for life's unity and diversity?

Focus Questions

- What are the structures and functions of animal and plant cells?
- What are the processes and functions of mitosis and meiosis?
- What are the interrelationships among DNA, genes and chromosomes?

Assessments

- Cell Travel Brochure
- Cell Analogy PowerPoint Project

Skill Objectives

Students will:

Unit 3 - Structures and Interactions of Living Things, 20 weeks top

Standards

Structure and Function

Many organisms, including humans, have specialized organ systems that interact with each other to maintain dynamic internal balance.

Students will:

- describe the structures of the human digestive, respiratory, and circulatory systems, and explain how they function to bring oxygen and nutrients to the cells and expel waste materials.
- explain how the human musculo-skeletal system supports the body and allows movement.

Science and Technology in Society

Technology allows us to improve food production and preservation, thus improving our ability to meet the nutritional needs of growing populations.

Students will:

- describe how freezing, dehydration, pickling and irradiation prevent food spoilage caused by microbes.

Unit Objectives

Students will be able to:

Students will be able to:

- identify and describe the structures and functions of the human digestive, respiratory, circulatory, musculo-skeletal and nervous systems.
- apply knowledge of human body systems to:
  - analyze current medical topics in the media.
  - practice healthy lifestyle choices.
- explain both the helpful and harmful relationships between microbes and humans.
- identify common strategies to prevent food spoilage due to microbes including freezing, dehydration, pickling, and irradiation.

Essential Questions

- How are organisms structured to ensure efficiency and survival?
- How do science and technology affect the quality lives?

Focus Questions

- How do the structures of living things allow them to carry out their life functions?
- How do the interactions between microbes and humans affect our daily lives?

Assessments

- "We Got the Beat" Inquiry Lab
- Diaphragm Model Building Activity

Skill Objectives

Students will: