

Jefferson County Schools
7th Grade Science Syllabus

A. Course 7th Grade Science

B. Department Science

C. Course Description This course is designed to give students a better understanding of the three branches of science. These branches include Life Science, Earth Science, and Physical Science.

D. Grade Term 9 Weeks

E. Grading Scale

<u>Range</u>	<u>Regular</u>
93-100	A
85-92	B
75-84	C
70-74	D

F. Term Dates

1. 1st 9 Weeks August 5, 2016 – October 7, 2016
2. 2nd 9 Weeks October 8, 2016 – December 16, 2016
3. 3rd 9 Weeks January 5, 2017 – March 15, 2017
4. 4th 9 Weeks March 16, 2017 – May 25, 2017

G. Textbook(s) TCAP Coach Book

Glencoe Tennessee Science 7th grade

H. Other Resources

1. Brain pop
2. Bill Nye videos
3. Quizlet

I. Major Assignments

1. Science fair project
2. Vocabulary Tests

J. Procedures for Parental Access to Instructional Materials

1. Aspen Parent Portal
2. Email Instructor
3. Parent Teacher Conference
 - a. There are two designated conference dates during the school year. Parents who would like to request additional meetings may make appointments for conferences with the teachers (during their planning periods), counselors, or a principal by telephoning the school office.

K. Field Trips

1. Any schedule fieldtrip will have a definite educational purpose and will reflect careful planning. Signed permission forms will be obtained when an off campus trip is planned.

L. Standards & Objectives

1. 1st Nine weeks:

Embedded Inquiry, Technology, and Engineering

SPI 0707.Inq.1

1. **SPI 0707. INQ. 1** Design a simple experimental procedure with an identified control and appropriate variables.
 - I can design an experiment that includes a control and appropriate variables.
2. **SPI 0707. INQ. 2** Select tools and procedures needed to conduct a moderately complex experiment
 - I can select and use the tools needed to complete an experiment.
3. **SPI 0707. INQ. 3** Interpret and translate data in a table, graph or diagram.
 - I can use tables, graphs, and other tools to organize and interpret data.
4. **SPI 0707. INQ. 4** Draw a conclusion that establishes a cause and effect relationship supported by evidence.
 - I can develop a cause and effect relationship based on data and the variables in an experiment.
5. **SPI 0707. INQ. 5** Identify a faulty interpretation of data that is due to bias or experimental error.
 - I can understand bias and experimental error and how it can affect the outcome of an experiment. .
6. **SPI 0707. T/E.1** Identify the tools and procedures needed to test the design features of a prototype.
 - I can design and test a prototype using the experimental design process.
7. **SPI 0707. T/E.2** Evaluate a protocol to determine if the engineering process was successfully applied.
 - I can use determine if the engineering design process was used correctly.
8. **SPI 0707. T/E.3** Distinguish between the intended benefits and the unintended consequences of a new technology.
 - I can compare the intended benefits with the unintended consequences of a new technology.
9. **SPI 0707. T/E. 4** Differentiate between adaptive and assistive engineering products (e.g., food, biofuels, medicines, integrated pest management)
 - I can describe, explain, and differentiate between an adaptive and an assistive bioengineered product.

Life Science

1. **SPI 0707.1.1** Make observations and describe the structure and function of organelles found in plant and animal cells.
 - I can identify and describe the function and shape of the following organelles: nucleus, cell wall, cell membrane, Nucleolus, Cytoplasm, Ribosomes, Mitochondria, Endoplasmic reticulum, golgi apparatus, Vacuole, Chloroplast, Lysosome, centrioles, and nuclear membrane.
 - I can list the differences between plant cell organelles/structures and animal cell organelle/structures. (Cell wall, Chloroplast, Centrioles).
2. **2nd Nine weeks:**
 2. **SPI 0707.1.2** Summarize how the different levels of organization are integrated within living systems.
 - I can understand and explain the levels of organization in living things: cells, tissues, organs, systems, and organisms.
 3. **SPI 0707.1.3** Describe the function of different organ systems and how collectively they enable complex multi-cellular organisms to survive.
 - I can describe the human body systems and how major organs in these systems interact to serve the needs of vertebrate organisms.

SYSTEM	MAIN ROLE	MAJOR ORGANS
Circulatory	Transports oxygen, nutrients, and other need materials to cells. Transports waste away.	Heart, Blood vessels, Blood
Digestive	Breaks down food in to nutrients the body can use.	Stomach, Small and large intestine, liver, pancreas,
Endocrine	Secretes hormones to regulate body functions.	Pituitary gland, Hypothalamus, Thyroid
Immune	Protects against disease.	Lymph nodes, white blood cells.
Integumentary	Provides a barrier against the external environment.	Skin, hair, nails
Muscular	Moves the body, Moves materials through the body.	Skeletal muscles, Tendons, Muscle muscles.
Nervous	Detects and responds to changes in the environment. Transmits information as electrochemical impulses throughout the body.	Spinal cord, Brain, Nerves
Respiratory	Exchanges oxygen and carbon dioxide between the body and the external environment.	Lungs
Skeletal	Moves and supports the body. Protects internal organs.	Bones, ligaments, cartilage.
Urinary	Removes waste	Kidneys. Bladder,

4. **SPI 0707.1.5** Observe and explain how materials move through simple diffusion.
 - I can tell the difference between diffusion, and osmosis (passive transports).
5. **SPI 0707.3.1** Distinguish between the basic features of photosynthesis and respiration.
 - I can use the presence of the cell wall, chloroplasts, centrioles, and cell plates to distinguish between plant and animal cells.
 - I can diagram photosynthesis as it occurs in the chloroplasts. (Simplified equation – products, reactants, chlorophyll, energy).

- I can describe cellular respiration as it occurs in the mitochondrion (Simplified equation – products, reactants, enzymes, energy)
 - I can recognize the relationship between photosynthesis and cellular respiration.
6. **SPI 0707.3.2** Investigate the exchange of oxygen and carbon dioxide between living things and the environment.
- I can identify the parts of the carbon-oxygen cycle.
 - I can recognize the importance of the carbon-oxygen cycle to living things.
 - I can create a diagram of the carbon-oxygen cycle.
7. **SPI 0707.1.4** Illustrate how cell division occurs in sequential stages to maintain the chromosome number of a species.
- I can recognize that cells contain genes and that each gene determines a trait.
 - I can describe mitosis and explain its significance and why mitosis is important for living things.
 - I can describe the stages of mitosis (Prophase, Metaphase, Anaphase, and Telophase).
 - I can identify the stages of mitosis using diagrams and pictures.
 - I can describe the cell cycle and explain its significance.
 - I can explain why cells need to divide.
 - I can identify the stages of the cell cycle (interphase, mitosis, and cytokineses).
 - I can distinguish between cytokinesis in animal and plant cells.
8. **SPI 0707.4.1** Compare and contrast the fundamental features of sexual and asexual reproduction.
- I can explain the difference between asexual and sexual reproduction.
 - I can recognize that in asexually reproducing organisms all the genes come from a single parent, and that in sexually reproducing organisms half of the genes come from each parent.
 - I can identify if offspring is produced by asexual or sexual reproduction.
9. **SPI 0707.4.2** Demonstrate an understanding of sexual reproduction in flowering plants.
- I can identify the different parts of a flowering plant (Stamen, Pistil, Sepals, and Petals) what it controls, and what part they play in sexual reproduction.
 - I can identify pollinators and their role in pollination.
- 3. 3rd. Nine weeks:**
10. **SPI 0707.4.3** Explain the relationship among genes, chromosomes, and inherited traits.
- I Can describe the importance chromosomes play in inheritance.
 - I Can explain the relationship between chromosomes and genes.
 - I Can tell what determines the inheritance of traits in organisms.

11. **SPI 0707.4.4** Predict the probable appearance of offspring based on the genetic characteristics of the parents.

- I can determine phenotypes based upon a particular genotype.
- I can make predictions about genotypes and phenotypes using a Punnett square.
- I can create and interpret Punnett squares to determine genotype and phenotype.
- I can use the rules of probability to predict the genotype and phenotype outcomes of one trait crosses.

2. Earth Science

12. **SPI 0707.7.1** Describe the physical properties of minerals.

- I can identify minerals by their physical properties (color, streak, hardness, luster, cleavage).
- I can read, understand, and explain Moh's hardness scale to identify minerals.

13. **SPI 0707.7.2** Summarize the basic events that occur during the rock cycle.

- I can understand that in the rock cycle forces on and in the earth cause rocks to change.
- I can describe and identify on a diagram how sedimentary, metamorphic, and igneous rocks are formed.

14. **SPI 0707.7.3** Analyze the characteristics of the earth's layers and the location of the major plates.

- I can differentiate between the different layers of the Earth (Crust, mantle, outer core, inner core, lithosphere, and asthenosphere).
- I can label the different layers of the Earth.
- I can describe the difference between the lithosphere & the asthenosphere.

15. **SPI 0707.7.4** Explain how earthquakes, mountain building, volcanoes, and sea floor spreading are associated with movements of the earth's major plates.

- I can describe that convection currents are the driving force behind plate tectonics
- I can describe what happens at a convergent boundary.
- I can describe what happens at a divergent boundary.
- I can describe what happens at a transform boundary

16. **SPI 0707.7.5** Differentiate between renewable and nonrenewable resources in terms of their use by man.

- I can define and give examples of renewable and nonrenewable energy sources that are used in everyday life.

17. **SPI 0707.7.6** Evaluate how human activities affect the earth's land, oceans, and atmosphere.

- I can analyze and evaluate the impact of man's use of earth's land, water, and atmospheric resources.

3. 4th Nine weeks

Physical Science

18. **SPI 0707.11.1** Identify six types of simple machines.
 - I can define and identify simple machines and describe how they are used.
Incline plane, screw, wedge, lever, wheel and axel, and pulley
19. **SPI 0707.11.2** Apply the equation for work in experiments with simple machines to determine the amount of force needed to do work.
 - I can use the equation to calculate the amount of force needed to do work.
20. **SPI 0707.11.3** Distinguish between speed and velocity.
 - I can explain how velocity and speed are different.
 - I can recognize speed and acceleration on motion graphs.
 - I can describe acceleration as a change in velocity.
 - I can calculate the average speed and acceleration using the equation.
21. **SPI 0707.11.4** Investigate how Newton's laws of motion explain an object's movement.
 - I can explain Newton's first law and apply it to real world situations.
 - I can explain Newton's second law, apply it to real world situations, and use it to solve a problem. ($F = ma$)
 - I can explain Newton's third law and apply it to real world situations.
 - I can compare balanced and unbalanced forces.
22. **SPI 0707.11.4** Compare and contrast the basic parts of a wave.
 - I can diagram, and label a transverse wave
 - I can diagram, and label a longitudinal wave
23. **SPI 0707.11.6** Investigate the types and fundamental properties of waves.
 - I can define a wave as a disturbance that transmits energy through matter and space(Crest, Trough, Wavelength, resting position, and amplitude.
 - I can distinguish how frequency and pitch related.
 - I can distinguish how amplitude & loudness related.