

D.H.H. Lengel Middle School Curriculum

Grade 8 science

Length of Block: 55 min

Blocks per cycle: 5

Length of Course: Yearly

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Description of Course: The goal of this class is to expose students to the topics covered in genetics and heredity. Cells are covered extensively, in regard to how they function, how they relate to human life and existence, and how they are designed to help the body work as a whole. The individual functions of the parts of a cell are studied in detail. Students will learn how genetics are passed on in a methodical, mostly predictable, way from one generation to the next by way of the mechanism of dominant and recessive genes. Students study in detail the function and structure of DNA and mRNA and the role they play in heredity. Also studied are genetic links and predispositions in terms of certain diseases and disorders. Briefly touched on are modern advances in genetics ie: GMOs, cloning, mapping of the human genome and early identification of genetic disorders.

Core Resources Available for Teachers for Instruction:

Interactive Science: Cells and Heredity

Interactive Science: Forces and Motion

Google Classroom

Lab Supplies

Core Resources Available for Teachers for Instruction:

*Interactive Science: Cells and Heredity**Interactive Science: Forces and Motion*

Parent

Marking Period	Unit Name	Objectives	Standards	Vocabulary	Assessments	Timeline
1	Nature of Science/ Scientific Method	Understand the difference between qualitative data and quantitative data. Understand the difference between observe vs infer. Compare and comprehend metric and empirical data measures.			<ul style="list-style-type: none"> • Independent Project • Quiz 	4 wks
1	Microscopes				Informal -webquest and lab	<1 wk

1	Cells	Know how organisms live, grow, reproduce, and respond to their environment.	3.1.6.A 3.1.7.A 3.1.8.A S.8.B.1.1.1 S.8.B.1.1.2 S.8.B.1.1.3 S.8.B.1.1.4 S.8.B.3.2.1 S.8.B.3.2.3	Cell membrane Cell wall Chloroplast Cytoplasm Mitochondria Nucleus Organelles Cells Molecules Organ systems Organs Tissues Environmental factors Genetic factors Scientific explanation	Cell simile Cell model Chapter 1 test	2-3 wks
2	8-5 Photosynthesis and Cellular Respiration	Know how and why organisms interact with their environment and the effects of the interactions among them.	3.1.6.A 3.1.7.A 3.1.8.A 3.1.7.A2 S.8.C.1.1.3 S.8.C.2.1.1 S.8.C.2.1.3 S.8.C.2.2.1 S.8.B.3.1.1 S.8.B.3.2.2 S.8.B.3.2.3 S.8.B.3.3.1 S.8.B.3.2.1 S.8.A.1.3.3 S.8.A.1.3.4	Aerobic respiration Anaerobic respiration Cellular respiration Fermentation Conservation of matter Consumer Flow of energy Producer	Photosynthesis activity -energy flow -needed sources for the process Quiz	~1 wk

2	8-6 Mitosis and Meiosis				Oreo mitosis Quiz	1-2 wks
2	8-7 Genetics	<p>Know how nature and technology allow for variety among species.</p> <p>Know that organisms can reproduce sexually or asexually to produce offspring.</p> <p>Know that alterations can occur, causing mutations.</p>	<p>3.1.8.C 3.4.8.E 3.1.7.B1 3.1.7.C1 3.1.8.A 3.4.8.B 4.4.8.A 4.5.8.A 4.5.8.C 4.5.8.D 3.1.7.C2</p> <p>S8.B.2.1.4 S8.B.2.1.3 S8.B.2.2.1 S8.B.2.2.2 S8.B.3.2.3 S8.B.2.1.1</p>	<p>Biotechnology Selective breeding Genetically Modified Organisms Asexual reproduction DNA Mutations Punnett squares Sexual reproduction Alleles Chromosomes Genes Genetic Heredity Egg cells Sperm cells Daughter cells Gametes</p>	<p>Punnett square quiz Monster Lab Foundational Genetics quiz Research project</p>	~6 wks
3 or when supplies are available	**Special Activity: Embryology	<p>Know the embryological similarities among a variety of species.</p>	<p>3.1.8.E 3.4.8.E</p> <p>S8.B.2.1.5</p>	Embryological relationships	<p>Chick Hatch Packet -data -graphs -persuasion essay -compare and contrast embryo development</p>	3 wks simultaneously with other lessons

3	8-8 Darwin	Know why there are so many similarities among organisms yet such a wide diversity.	3.1.8.A 3.1.8.C 3.4.8.B 3.4.8.A 4.2.8.C 3.1.8.C 3.4.8.E 4.4.8.A 4.5.8.A 4.5.8.C 4.5.8.D S.8.B.2.1.5 S8.B.2.1.1 S8.B.2.1.2 S8.B.2.1.3 S8.B.3.2.3 S8.B.3.2.2	Evolution Evolutionary descent Evolutionary history Fossil Fossil record Homologous structures Radioactive dating Anatomical Anatomical fossil record Natural selection Genetic variation Predominance Suppression Adaptation Evolve Variation	Evolution of an Object project	~3wks
3	A. Motion B. Force, Friction, and Gravity	Know and predict interactions between objects within systems.	3.2.5.B1 3.2.6.B1 3.2.7.B1 S8.A.3.2 S8.C.3.1.1 S8.A.1.1	Gravitation Gravitational forces Law of universal gravity Mass Weight Acceleration Balanced force Displacement Distance Force Motion graphs Net force	A. Quiz B. Quiz	~3 wks

				Position Reference frame Speed Unbalanced force Velocity Force pairs		
4	8-11 Newton	Know and predict interactions between objects within systems.	3.2.5.B1 3.2.6.B1 3.2.7.B1 S8.C.3.1.1 S8.A.2.1 S8.A.2.2	Newton's 1st Law of Motion Newton's 2nd Law of Motion Newton's 3rd Law of Motion	Video project Quiz	~2wks
4	A. Work and Power B. Simple Machines	Know and predict interactions between objects within systems. Know that energy is transferred and conserved.	3.2.5.B3 3.2.6.B3 3.2.8.B3 S8.A.1.1 S8.C.3.1.3 S8.A.2.1 S8.A.2.2 S8.C.2.1.3	Distance Force Mechanical advantage Simple Machines Work Energy transfer Thermal Energy Law of conservation of energy	A. Quiz B. Group presentation, jigsaw style to present information on all types of machines	2-3wk
	Energy	Know the differences between various energy sources: solar, cogen, wind, etc			Research activity	<1 wk
4	Buoyancy	Students will understand buoyant force. Students will understand how multiple laws and scientific		Archimedes principle Buoyant force Density	Boat race Project or alternate science fair style activity	~2 wks

		principles work together to allow a boat to float.		Water displacement Efficient design		
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