**Grade 8 Science Curriculum 2017**

**Life Science**

**Topic Species and Reproduction**

This topic focuses on continuation of the species.

**#1 Content Statement: Reproduction is necessary for the continuation of every species.**

Essential Understanding: Every organism alive today comes from a long line of ancestors who reproduced successfully every generation. Reproduction of offspring can occur sexually (two individuals) or asexually (one individual).

Vocabulary ***reproduction, traits, organism, species, asexual and sexual reproduction, homozygous, heterozygous, budding, binary fission, mitosis, meiosis, gene, egg, sperm, offspring***

Resources/ Instructional Strategy

Prentice Hall Cells and Heredity textbook, plants and hydra investigations

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

Daily assignments, labs, quizzes, observation, exit slip

Summative Assessment

Multiple choice, short and extended response question test

Quarter Taught and length of Unit

First quarter, 3 weeks

**Topic Species and Reproduction**

This topic focuses on continuation of the species

**#2 Content Statement: The characteristics of an organism are a result of inherited traits received from parents.**

Essential Understanding: Genes determine all traits. DNA is transmitted from parent (s) to offspring during reproduction.

Vocabulary traits, organism, species, asexual and sexual reproduction, homozygous, heterozygous, budding, binary fission, mitosis, meiosis, DNA, allele, pedigree, codominant, genes, egg, sperm, offspring, ***Mendel’s Law of Segregation, Mendel’s Law of Independent Assortment, genotype, phenotype, dominant traits, recessive traits***

Resources/ Instructional Strategy

Prentice Hall Cells and Heredity textbook, family pedigrees,

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

Daily assignments, labs, quiz, observations, exit slip

Summative Assessment

Multiple choice, short and extended response question test

Mouse Genetics Gizmo

Quarter Taught and length of Unit

First quarter, 2 weeks

**Topic Species and Reproduction**

This topic focuses on continuation of the species

**#3 Content Statement: Diversity of species occurs through gradual processes over many generations. Fossil records provide evidence that changes have occurred in number and types of species.**

Essential Understanding: Fossils provide important evidence of how life and environmental conditions have changed. Throughout Earth’s history, changes in the environment have caused extinction of species.

Vocabulary traits, organism, species, asexual and sexual reproduction, homozygous, heterozygous, budding, binary fission, mitosis, meiosis, DNA, allele, pedigree, codominant, genes, egg, sperm, offspring, Mendel’s Law of Segregation, Mendel’s Law of Independent Assortment, genotype, phenotype, dominant traits, recessive traits, ***fossil, variation, geologic record, extinction, biodiversity, species, diversity, transitional form***

Resources/ Instructional Strategy

Prentice Hall Cells and Heredity textbook, Allosaurus Movie

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

Daily assignments, labs, observations, exit slip

Summative Assessment

Multiple choice, short and extended response question test

Natural Selection Gizmo

Quarter Taught and length of Unit

First quarter, 2 weeks

**Earth and Space Science**

**Topic: Physical Earth**

This topic focuses on the physical features of Earth and how they formed. This includes the interior of Earth, the rock record, plate tectonics and landforms.

**#4 Content Statement: Evidence of the dynamic changes of Earth’s surface through time is found in the geologic record.**

Essential Understanding: Earth history is based on observations of the geologic record. There are different methods to determine relative and absolute age of some rock layers in the geologic record.

Vocabulary superposition, index fossil, relative dating, crosscutting, relative age, absolute age, radiometric dating, sedimentary rocks, uniformitarianism

Resources/ Instructional Strategy

Prentice Hall Inside Earth and Earth’s Changing Surface textbook

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

Daily assignments, labs, web quest, observations, exit slip

Summative Assessment

Multiple choice, short and extended response question test

Law of Superposition Project

Quarter Taught and length of Unit

Second quarter, 3 weeks

**Topic: Physical Earth**

This topic focuses on the physical features of Earth and how they formed. This includes the interior of Earth, the rock record, plate tectonics and landforms.

**#5 Content Statement: A combination of constructive and destructive geologic processes formed Earth’s surface**.

Essential Understanding: Earth’s surface is formed from a variety of different geologic processes, including but not limited to plate tectonics.

Vocabulary superposition, index fossil, relative dating, crosscutting, relative age, absolute age, radiometric dating, sedimentary rocks, uniformitarianism, ***hydrosphere, lithosphere, topography, tectonic, erosion, deposition, satellite, LANDSAT(remote sensing), discharge rates, gradients, velocity, moraines, outwash, tills, erratic, kettles, eskers***

Resources/ Instructional Strategy

Prentice Hall Inside Earth and Earth’s Changing Surface text book

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

Daily assignments, labs, observations, exit slip

Summative Assessment

Multiple choice, short and extended response question test

Landform Presentations

Quarter Taught and length of Unit

Second quarter, 4 ½ weeks

**Topic: Physical Earth**

This topic focuses on the physical features of Earth and how they formed. This includes the interior of Earth, the rock record, plate tectonics and landforms.

**#6 Content Statement: Earth’s crust consists of major and minor tectonic plates that move relative to each other.**

Essential Understanding: Historical data and observations have contributed to the theory of plate tectonics. Convection currents in the crust and mantle cause the plate movement.

Vocabulary superposition, index fossil, relative dating, crosscutting, relative age, absolute age, radiometric dating, sedimentary rocks, uniformitarianism***,*** hydrosphere, lithosphere, topography, tectonic, erosion, deposition, satellite, LANDSAT(remote sensing), discharge rates, gradients, velocity, moraines, outwash, tills, erratic, kettles, eskers, ***continental drift, convection theory, sea-floor spreading, plate boundaries, convergent boundary, divergent boundary, transform boundary***

Resources/ Instructional Strategy

Prentice Hall Inside Earth and Earth’s Changing Surface textbook, Ocean Movie, Land Formations Movie

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

Daily assignments, labs, quiz, observations, exit slip, demonstrations

Summative Assessment

Plate Tectonics Foldable

Pangaea Gizmo

Quarter Taught and length of Unit

Third Quarter, 4 weeks

**Topic: Physical Earth**

This topic focuses on the physical features of Earth and how they formed. This includes the interior of Earth, the rock record, plate tectonics and landforms.

**#7 Content Statement: The composition and properties of Earth’s interior are identified by the behavior of seismic waves. Processes that formed planets generated energy that continues to exist today.**

Essential Understanding: We can differentiate the layers of Earth’s interior by studying or examining refraction and reflection of seismic waves moving through the Earth’s interior.

Vocabulary superposition, index fossil, relative dating, crosscutting, relative age, absolute age, radiometric dating, sedimentary rocks, uniformitarianism***,*** hydrosphere, lithosphere, topography, tectonic, erosion, deposition, satellite, LANDSAT(remote sensing), discharge rates, gradients, velocity, moraines, outwash, tills, erratic, kettles, eskers, continental drift, convection theory, sea-floor spreading, plate boundaries, convergent boundary, divergent boundary, transform boundary, ***refraction, reflection, seismic wave, inner core, outer core, mantle, crust,***

Resources/ Instructional Strategy

Prentice Hall Inside Earth and Earth’s Changing Surface textbook, Seismic Wave Simulations and PowerPoint

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

Daily assignments, labs, quizzes, observations, exit slip

Summative Assessment

Building Project

Quarter taught and length of unit

Third quarter, 2 ½ weeks

**Physical Science**

**Topic: Forces and Motion**

This topic focuses on forces and motion within, on and around the Earth and within the universe.

**#8 Content Statement: Forces have magnitude and direction.**

Essential Understanding: The motion of an object is always measured with respect to a reference point. It is affected by the force acting on the object.

Vocabulary force, magnitude, net force, constant speed, reference point, balance force, unbalanced force, inertia, kinetic friction, drag, gravity, Newton’s three laws of motion

Resources/ Instructional Strategy

Prentice Hall Force and Motion textbook, Roller Coaster Physics movie

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

Daily assignments, labs, observations, exit slip

Summative Assessment

Phet Lab Simulations

Quarter Taught and length of Unit

Third quarter, 2 weeks

**Topic: Forces and Motion**

This topic focuses on forces and motion within, on and around the Earth and within the universe.

**#9 Content Statement : There are different types of potential energy.**

Essential Understanding: Potential energy occurs in various types: gravitational, elastic, chemical electrical and magnetic.

Vocabulary force, magnitude, net force, constant speed, reference point, balance force, unbalanced force, inertia, kinetic friction, drag, Newton’s three laws of motion, **gravitational potential energy, elastic potential energy, chemical potential energy, electrical potential energy, magnetic potential energy**

Resources/ Instructional Strategy

Prentice Hall Force and Motion textbook

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

labs, observations, exit slip

Summative Assessment

Multiple Choice and Extended Response Test

Energy Skate Park Simulation

Quarter Taught and length of Unit

Fourth quarter, 4 weeks

**Topic: Forces and Motion**

This topic focuses on forces and motion within, on and around the Earth and within the universe.

**#10 Content Statement: Forces between objects act when the objects are in direct contact or when they are not touching.**

Essential Understanding: Field models can be used to explain how two objects can exert forces on each other without touching.

Vocabulary force, magnitude, net force, constant speed, reference point, balance force, unbalanced force, inertia, kinetic friction, drag, Newton’s three laws of motion**,** gravitational potential energy, elastic potential energy, chemical potential energy, electrical potential energy, magnetic potential energy, ***fields, weight, mass, electric fields, magnetic fields, gravitational field, field model, magnetic poles, generator, electromagnet***

Resources/ Instructional Strategy

Prentice Hall Force and Motion text book, Bill Nye Movie Magnetism, Glencoe OLD science book

Diverse Learners

Collaborate with Intervention Specialist

Formative Assessment:

Daily assignments, demonstrations, exit slip, magnet stations

Summative Assessment

Multiple choice, short and extended response question test

Magnetism Gizmo

Quarter Taught and length of Unit

Fourth quarter, 2 week

Year Long

Key Ideas and Details:

CCSS.ELA-LITERACY.RST.6-8.1

Cite specific textual evidence to support analysis of science and technical texts.

CCSS.ELA-LITERACY.RST.6-8.2

Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

CCSS.ELA-LITERACY.RST.6-8.3

Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Craft and Structure:

CCSS.ELA-LITERACY.RST.6-8.4

Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

CCSS.ELA-LITERACY.RST.6-8.5

Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

CCSS.ELA-LITERACY.RST.6-8.6

Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

Integration of Knowledge and Ideas:

CCSS.ELA-LITERACY.RST.6-8.7

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

CCSS.ELA-LITERACY.RST.6-8.8

Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

CCSS.ELA-LITERACY.RST.6-8.9

Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Range of Reading and Level of Text Complexity:

CCSS.ELA-LITERACY.RST.6-8.10

By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

Text Types and Purposes:

CCSS.ELA-LITERACY.W.8.1

Write arguments to support claims with clear reasons and relevant evidence

CCSS.ELA-LITERACY.W.8.1.A

Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.

CCSS.ELA-LITERACY.W.8.1.B

Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.

CCSS.ELA-LITERACY.W.8.1.C

Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.

CCSS.ELA-LITERACY.W.8.1.D

Establish and maintain a formal style.

CCSS.ELA-LITERACY.W.8.1.E

Provide a concluding statement or section that follows from and supports the argument presented.

CCSS.ELA-LITERACY.W.8.2

Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.W.8.2.A

Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.8.2.B

Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.

CCSS.ELA-LITERACY.W.8.2.C

Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.

CCSS.ELA-LITERACY.W.8.2.D

Use precise language and domain-specific vocabulary to inform about or explain the topic.

CCSS.ELA-LITERACY.W.8.2.E

Establish and maintain a formal style.

CCSS.ELA-LITERACY.W.8.2.F

Provide a concluding statement or section that follows from and supports the information or explanation presented.