

Carrollton Exempted Village School District – Carrollton, Ohio
OHIO COMMON CORE STATE STANDARDS

Curriculum Map

Course Title: Biology	Unit: Intro to Biology	Academic Year: 2013-2014
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Essential Questions for this Month: 1. What is the definition of biology?
 2. What is the difference between an observation and an inference?
 3. What are the steps of the scientific method?

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative- slap game	
5 days	Lecture/Notes	Formative-walking around observing, also asking questions and exit tickets.	PowerPoint
3 days	Worksheets	Formative	OGT packet, Identifying Controls, Frog book, The Science of Biology
1 day	Review	Formative- observations during the game	PowerPoint-Jeopardy
1 day	Written test	Summative	Notes and Book

Vocabulary:
 Biology, Homeostasis, Development, Observation, Measuring, Sampling, Hypothesis, Inference

Core Standards

(OLD) PreK-12 Science

S05.

Scientific Inquiry

A.

Participate in and apply the processes of scientific investigation to create models and to design, conduct, evaluate and communicate the results of these investigations. (09-10)

02.

Present scientific findings using clear language, accurate data, appropriate graphs, tables, maps and available technology. (10)

04.

Draw conclusions from inquiries based on scientific knowledge and principles, the use of logic and evidence (data) from investigations. (10)

05.

Explain how new scientific data can cause any existing scientific explanation to be supported, revised or rejected. (10)

S06.

Scientific Ways of Knowing

A.

Explain that scientific knowledge must be based on evidence, be predictive, logical, subject to modification and limited to the natural world. (09-10)

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Curriculum Map

Course Title: Biology	Unit: Chemistry	Academic Year: 2013-2014
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Essential Questions for this Month:

- 1. What is an atom and what are its 3 components?**
- 2. What is the atomic number and how do you find the number of neutrons?**
- 3. What is an isotope?**

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative-Slap game	
4 days	Lecture/Notes	Formative- walking around observing, also asking questions and exit tickets.	PowerPoint
2 days	Worksheets	Formative	Proton, neutron, electron worksheet, frog book, OGT packet, Chemical Basis of Life.
2 days	Verbal test/Written test	Summative	Notes and Book

Vocabulary:

Chemistry, Matter, Substance, Physical Properties, Chemical Properties, Elements, Chemical Bond, Compound, Mixtures, Heterogeneous, Homogeneous, Protons, Neutrons, Electrons, Atom, Neutral Atom, Atomic number, Mass number, Isotopes, Reactivity, Corrosion , Physical Change, Chemical Change, Law of Conservation, Energy, Thermal Energy, Temperature, Endothermic Change, Exothermic Change, Ionic bonds, Covalent bonds.

Core Standards

PreK-12 Science

S03.

Physical Sciences

A.

Describe that matter is made of minute particles called atoms and atoms are comprised of even smaller components. Explain the structure and properties of atoms. (09-10)

B.

Explain how atoms react with each other to form other substances and how molecules react with each other or other atoms to form even different substances. (09-10)

C.

Describe the identifiable physical properties of substances (e.g., color, hardness, conductivity, density, concentration and ductility). Explain how changes in these properties can occur without changing the chemical nature of the substance. (09-10)

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Curriculum Map

Course Title: Biology	Unit: Biochemistry	Academic Year: 2013-2014
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Essential Questions for this Month:

1. What are the 5 types of organic compounds?
2. How are organic compounds different than inorganic compounds?
3. What are the different types of bonds?

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative-Slap game	
4 days	Lecture/Notes	Formative- observations walking around the class and asking questions	PowerPoint
2 days	Worksheets	Formative	OGT packet, Molecules of Life
3 days	Building Monomers Lab	Summative- checking the correctness of the models.	Molecule kits
1 day	Review	Formative	PowerPoint
2 days	Verbal test/Written test	Summative	Notes and Book

Vocabulary:

Inorganic compounds, Organic compounds, Isomers, Macromolecules, Monomers, Polymers, Dehydration Synthesis, Hydrolysis, Monosaccharides, Disaccharides Polysaccharides, Cellulose, Chiton, Saturated Fats, Unsaturated fats, Polyunsaturated fats, Proteins, Dipeptide, Peptide bond, Polypeptide, *DNA, RNA, ATP*

Core Standards

(OLD) PreK-12 Science

S02.

Life Sciences

D.

Explain the flow of energy and the cycling of matter through biological and ecological systems (cellular, organismal and ecological). (09-10)

11.

Explain that living organisms use matter and energy to synthesize a variety of organic molecules (e.g., proteins, carbohydrates, lipids and nucleic acids) and to drive life processes (e.g., growth, reacting to the environment, reproduction and movement). (10)

Carrollton Exempted Village School District – Carrollton, Ohio
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Curriculum Map

Course Title: Biology	Unit: Cells	Academic Year: 2013-2014
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Essential Questions for this Month:

- 1. What are the 3 parts of the cell theory?**
- 2. What are the 2 types of cells and how are they different?**
- 3. What is the importance of the organelles within a cell.**

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
3 days	Lecture/Notes	Formative- walking around observing, also asking questions and exit tickets.	PowerPoint
5 days	Worksheet challenge	Summative	Label a plant, label an animal, Introduction to the Cell, Parts of a Eukaryotic Cell, A Tour of the Cell, Study Guide, Function of the Organelles, Parts of a Cell Matching
1 day	Computer Lab	Formative	Cellsalive.com
2 days	Mini Quizzes	Formative	
1 day	Pumpkin Project	Summative	Book, notes, and worksheets
2 days	Testing- students will have the option to take the verbal test, if they do not get 5 correct answers, they will have to take the written test.	Summative	Notes and book

Vocabulary:

Cell theory, Cellular Differentiation, Prokaryotic Cell, Eukaryotic Cell, Chromosome, Organelles, Plasma Membrane, Nucleus, Nucleolus, Nuclear Pore, Genes, Chromatin, Centrioles, Cytoplasm, Cytoplasmic Streaming, Ribosome, Smooth Endoplasmic Reticulum, Rough Endoplasmic Reticulum, Golgi Body, Lysosome, Vacuole, Mitochondria, Cristae, Microtubules, Cell Wall, Plastids, Chromoplast, Leucoplast, Chloroplast, Tumors, Metastasis, Virus

Core Standards

S02.

Life Sciences

A.

Explain that cells are the basic unit of structure and function of living organisms, that once life originated all cells come from pre-existing cells, and that there are a variety of cell types. (09-10)

01.

Explain that living cells

- a. are composed of a small number of key chemical elements (carbon, hydrogen, oxygen, nitrogen, phosphorus and sulfur)
- b. are the basic unit of structure and function of all living things
- c. come from pre-existing cells after life originated, and
- d. are different from viruses. (10)

02.

Compare the structure, function and interrelatedness of cell organelles in eukaryotic cells (e.g., nucleus, chromosome, mitochondria, cell membrane, cell wall, chloroplast, cilia, flagella) and prokaryotic cells. (10)

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Curriculum Map

Course Title: Biology	Unit: Cellular Transport	Academic Year: 2013-2014
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Essential Questions for this Month:

1. What is the importance of the cell membrane?
2. How is active transport different from passive transport?
3. What are the different types of active and passive transport?

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative- slap game	
3 days	Lecture/Notes	Formative walking around observing, also asking questions and exit tickets.	PowerPoint
1 day	Jeopardy Review Game	Formative- observations during the game	PowerPoint
1 day	Quiz	Summative	Notes and Book

Vocabulary:

Cellular transport, Homeostasis, Lipid layer, Phospholipids, Cholesterol, Transport Proteins, Pumps and Gates, Tunnels and Poles, Hydrophilic, Hydrophobic, Permeable, Diffusion, Simple Diffusion, Concentration gradient, Facilitated Diffusion, Osmosis, Hypertonic, Hypotonic, Isotonic, Turgor Pressure, Active Transport, Sodium-Potassium Pump, Bulk Transport, Endocytosis, Phagocytosis, Pinocytosis, Exocytosis

Core Standards

(OLD) PreK-12 Science

S02.

Life Sciences

B.Explain the characteristics of life as indicated by cellular processes and describe the process of cell division

and development. (09-10)

03. Explain the characteristics of life as indicated by cellular processes including

- a. homeostasis
- b. energy transfers and transformation
- c. transportation of molecules
- d. disposal of wastes
- e. synthesis of new molecules. (10)

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Curriculum Map

Course Title: Biology	Unit: Cell Division	Academic Year: 2013-2014
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Essential Questions for this unit:

- 1. What is the difference between Mitosis and Meiosis?**
- 2. Which types of cells go through Mitosis? Which type of cells go through Meiosis?**
- 3. How many chromosomes do you have at the end of Mitosis and Meiosis?**

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary game	Formative-- Students will play the slap game to go over vocabulary for this section.	
4 days	Notes/lecture over material	Formative- walking around observing, also asking questions and exit tickets.	PowerPoint
1 day	Licorice activity	Formative- observations while the game is going on.	
1 day	Computer lab	Formative- observations, walking around while students are working on the website.	Website: cellsalive.com
1 day	Mitosis book with pictures	Summative	Notes
2 days	Testing- students will have the option to take the verbal test, if they do not get 5 correct answers, they will have to take the written test.	Summative- verbal and written test scores	

Vocabulary:

Asexual Reproduction, Binary Fission, Budding, Spores, Regeneration, Sexual Reproduction, Cell division, DNA, Chromosomes, chromatin, histones, Chromatid, Centromere, Somatic Cell, Homologous, Gametes, Fertilization, Autosomes, Karyotype, Gene, Interphase, Mitosis, Cytokinesis, Cleavage Furrow, Cell Plate, Oogenesis, Spermatogenesis, Synapsis, Tetrad, Crossing Over, Chiasma, Independent assortment

Core Standards

(OLD) PreK-12 Science

S02.

Life Sciences

B.Explain the characteristics of life as indicated by cellular processes and describe the process of cell division and development. (09-10)

04.Summarize the general processes of cell division and differentiation, and explain why specialized cells are useful to organisms and explain that complex multicellular organisms are formed as highly organized arrangements of differentiated cells. (10)

C.Explain the genetic mechanisms and molecular basis of inheritance. (09-10)

07.Describe that spontaneous changes in DNA are mutations, which are a source of genetic variation. When mutations occur in sex cells, they may be passed on to future generations; mutations that occur in body cells may affect the functioning of that cell or the organism in which that cell is found. (10)

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Curriculum Map

Course Title: Biology	Unit: Genetics	Academic Year: 2013-2014
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Essential Questions for this Month:

- 1. What is the difference between homozygous and heterozygous?**
- 2. How do you find the phenotype and genotype?**
- 3. What is the difference between the p₁, f₁ and f₂ generations.**

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative-Slap game	
4 days	Lecture/Notes	Formative- observations walking around the class and asking questions	PowerPoint
4 days	Worksheets	Formative	OGT packet, Monohybrid Cross, Genetics Problem Test, Crossword, Crosses Involving 1 Trait, Genetics With a Smile
1 day	Review	Formative	PowerPoint
2 days	Verbal test/Written test	Summative	Notes and Book

Vocabulary:

Genetics Vocabulary

- Trait, Heredity, Genetics, Allele, Dominant, Recessive, Genotype, Phenotype, Homozygous genotype, Heterozygous genotype, Self-fertilization, Cross-fertilization, Parental P₁ Generation, F₁ Generation, F₂ Generation, Genes, Law of Dominance, Law of Segregation, Law of Independent Assortment, Incomplete Dominance, Codominance, Dihybrid cross,

Probability

Core Standards

S02. Life Sciences

C.

Explain the genetic mechanisms and molecular basis of inheritance. (09-10)

05.

Illustrate the relationship of the structure and function of DNA to protein synthesis and the characteristics of an organism. (10)

06.

Explain that a unit of hereditary information is called a gene, and genes may occur in different forms called alleles (e.g., gene for pea plant height has two alleles, tall and short). (10)

07.

Describe that spontaneous changes in DNA are mutations, which are a source of genetic variation. When mutations occur in sex cells, they may be passed on to future generations; mutations that occur in body cells may affect the functioning of that cell or the organism in which that cell is found. (10)

08.

Use the concepts of Mendelian and non-Mendelian genetics (e.g., segregation, independent assortment, dominant and recessive traits, sex-linked traits and jumping genes) to explain inheritance. (10)

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OHIO COMMON CORE STATE STANDARDS

Curriculum Map

Course Title: Biology	Unit: Mechanisms of Heredity	Academic Year: 2013-2014
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Essential Questions for this Month:

- 1. How do genetic mutations occur?**
- 2. What is a pedigree and how do you apply it?**
- 3. How are sex-linked traits different from other traits?**

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative-Slap game	
3 days	Lecture/Notes	Formative- observations walking around the class and asking questions	PowerPoint
2 days	Worksheets	Formative	Book work pg 216-221, Inheritance Problems, Investigation: Sex-Linked Traits, Review Sheet.
1 day	Review	Formative	PowerPoint
2 days	Verbal test/Written test	Summative	Notes and Book

Vocabulary:

Pedigree, Gene, Allele, Linkage Group, Sex-Influenced Trait, Polygenes, Multiple Genes, Gene Linkage, Crossing Over, Structural Genes, Regulatory Genes, Monosomy, Trisomy, Mutations, Polyploidy.

Core Standards

S02. Life Sciences

C.

Explain the genetic mechanisms and molecular basis of inheritance. (09-10)

05.

Illustrate the relationship of the structure and function of DNA to protein synthesis and the characteristics of an organism. (10)

06.

Explain that a unit of hereditary information is called a gene, and genes may occur in different forms called alleles (e.g., gene for pea plant height has two alleles, tall and short). (10)

07.

Describe that spontaneous changes in DNA are mutations, which are a source of genetic variation. When mutations occur in sex cells, they may be passed on to future generations; mutations that occur in body cells may affect the functioning of that cell or the organism in which that cell is found. (10)

08.

Use the concepts of Mendelian and non-Mendelian genetics (e.g., segregation, independent assortment, dominant and recessive traits, sex-linked traits and jumping genes) to explain inheritance. (10)

Carrollton Exempted Village School District – Carrollton, Ohio
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Curriculum Map

Course Title: Biology	Unit: DNA and Protein Synthesis	Academic Year: 2013-2014
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Essential Questions for this Month:

- 1. How do the different enzymes work together to create a new strand of DNA?**
- 2. From what template is DNA made?**
- 3. What are the steps in transcription and translation?**

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative-Slap game	
4 days	Lecture/Notes	Formative- observations walking around the class and asking questions	PowerPoint
2 days	Worksheets	Formative	Codons, Study Guide, DNA and the Language of Life
1 day	Codon Bingo	Formative	http://www.accessexcellence.org/AE/AEPC/WWC/1994/codon_bingo.php
1 day	Review	Formative	PowerPoint
2 days	Verbal test/Written test	Summative	Notes and Book

Vocabulary:

Double Helix, Nucleotide, Adenine, Thymine, Cytosine, Guanine, Purines, Pyrimidines, Hydrogen Bonds, Replication Fork, Helicase, Topoisomerase, Leading Strand, Lagging Strand, Okazaki Fragments, DNA Ligase, RNA, mRNA, tRNA, rRNA, Codon, Anticodon, Amino Acids, Translation, Transcription.

Core Standards

S02. Life Sciences

C.

Explain the genetic mechanisms and molecular basis of inheritance. (09-10)

05.

Illustrate the relationship of the structure and function of DNA to protein synthesis and the characteristics of an organism. (10)

06.

Explain that a unit of hereditary information is called a gene, and genes may occur in different forms called alleles (e.g., gene for pea plant height has two alleles, tall and short). (10)

07.

Describe that spontaneous changes in DNA are mutations, which are a source of genetic variation. When mutations occur in sex cells, they may be passed on to future generations; mutations that occur in body cells may affect the functioning of that cell or the organism in which that cell is found. (10)

08.

Use the concepts of Mendelian and non-Mendelian genetics (e.g., segregation, independent assortment, dominant and recessive traits, sex-linked traits and jumping genes) to explain inheritance. (10)

Carrollton Exempted Village School District – Carrollton, Ohio
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Curriculum Map

Course Title: Biology	Unit: Energy and Photosynthesis	Academic Year: 2013-2014
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Essential Questions for this Month:

- 1. Where does photosynthesis take place?**
- 2. What are the major factors that make photosynthesis occur?**
- 3. What are the end products of photosynthesis and respiration?**

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative-Slap game	
4 days	Lecture/Notes	Formative- observations walking around the class and asking questions	PowerPoint
2 days	Worksheets	Formative	The Calvin Cycle, Capturing the Energy in Light, Review Sheet
1 day	Review	Formative	PowerPoint
2 days	Verbal test/Written test	Summative	Notes and Book

Vocabulary:

Mesophyll Cells, Chlorophyll, Stomata, Thylakoid, Stroma, Grana, Chlorophyll a, Chlorophyll b, Carotenoids, Photosystem II, Photosystem I, Electron Transport Chain, NAD, NADH, Chemiosmosis, Calvin Cycle, Guard Cells.

Core Standards

D. Explain the flow of energy and the cycling of matter through biological and ecological systems (cellular, organismal and ecological). (09-10)

09. Describe how matter cycles and energy flows through different levels of organization in living systems and between living systems and the physical environment. Explain how some energy is stored and much is dissipated into the environment as thermal energy (e.g., food webs and energy pyramids). (10)

10. Describe how cells and organisms acquire and release energy (photosynthesis, chemosynthesis, cellular respiration and fermentation). (10)

11. Explain that living organisms use matter and energy to synthesize a variety of organic molecules (e.g., proteins, carbohydrates, lipids and nucleic acids) and to drive life processes (e.g., growth, reacting to the environment, reproduction and movement). (10)

Carrollton Exempted Village School District – Carrollton, Ohio
OHIO COMMON CORE STATE STANDARDS

Curriculum Map

Course Title: Biology	Unit: Evolution	Academic Year: 2013-2014
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Essential Questions for this Month:

- 1. What are some pieces of evidence that points to evolution?**
- 2. What is Natural Selection?**
- 3. What are the different factors that cause evolution?**

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative-Slap game	
7 days	Lecture/Notes	Formative- observations walking around the class and asking questions	PowerPoint
2 days	Worksheets	Formative	Evolution: A History and a Process, Review Sheet
1 day	Review	Formative	PowerPoint
2 days	Verbal test/Written test	Summative	Notes and Book

Vocabulary:

Evolution, Acquired Trait, Fitness, Stabilizing Selection, Directional Selective, Disruptive Selection, Isolation, Species, Gradualism, Punctuated Equilibrium, Fossil, Absolute Age, Relative age, Law of Superposition, Homologous, Analogous, Vestigial Structure, Coevolution, Convergent Evolution, Divergent Evolution, Gene Pool, Bottleneck Effect, Founder’s Effect, Endosymbiosis.

Core Standards

E. Explain how evolutionary relationships contribute to an understanding of the unity and diversity of life. (09-10)

12. Describe that biological classification represents how organisms are related with species being the most fundamental unit of the classification system. Relate how biologists arrange organisms into a hierarchy of groups and subgroups based on similarities and differences that reflect their evolutionary relationships. (10)

13. Explain that the variation of organisms within a species increases the likelihood that at least some members of a species will survive under gradually changing environmental conditions. (10)

14. Relate diversity and adaptation to structures and their functions in living organisms (e.g., adaptive radiation). (10)

Carrollton Exempted Village School District – Carrollton, Ohio

OHIO COMMON CORE STATE STANDARDS

Curriculum Map

Course Title: Biology	Unit: Taxonomy	Academic Year: 2013-2014
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Essential Questions for this Month: 1. Why do we need to classify organisms?

2. What is a species?

3. What are the different categories for classification?

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative-Slap game	
3 days	Lecture/Notes	Formative- observations walking around the class and asking questions	PowerPoint
2 days	Worksheets	Formative	Book work, OGT, Dichotomous Keying, Study Guide
1 day	Review	Formative	PowerPoint
2 days	Verbal test/Written test	Summative	Notes and Book

Vocabulary:

Classification, Binomial Nomenclature, Taxa, Domain, Homologous Structures, Cladogram

Core Standards

E. Explain how evolutionary relationships contribute to an understanding of the unity and diversity of life. (09-10)

12. Describe that biological classification represents how organisms are related with species being the most fundamental unit of the classification system. Relate how biologists arrange organisms into a hierarchy of groups and subgroups based on similarities and differences that reflect their evolutionary relationships. (10)

13. Explain that the variation of organisms within a species increases the likelihood that at least some members of a species will survive under gradually changing environmental conditions. (10)

14. Relate diversity and adaptation to structures and their functions in living organisms (e.g., adaptive radiation). (10)

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Curriculum Map

Course Title: Biology	Unit: Ecology	Academic Year: 2013-2014
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Essential Questions for this Month: 1.

2. What is a species?

3. What are the different categories for classification?

Time Frame	Instructional Strategies and Differentiation	Assessment	Resources
1 day	Vocabulary Review	Formative-Slap game	
7 days	Lecture/Notes	Formative- observations walking around the class and asking questions	PowerPoint
4 days	Worksheets	Formative	Changes Within Ecosystems, Food Chains/Food Webs, Interdependence of Life, Biomes Matching, Animal Feeding Strategies
1 day	Review	Formative	PowerPoint
2 days	Verbal test/Written test	Summative	Notes and Book

Vocabulary:

Species, Population, Organism, Ecosystem, Biosphere, Community, Pioneer species, Biodiversity, Habitat, realized niche, fundamental niche, Symbiosis, Mutualism, Commensalism, Abiotic, Biotic, Autotroph, Consumer, Food Chain, Food Web, Succession, Carrying Capacity.

Core Standards

F. Explain the structure and function of ecosystems and relate how ecosystems change over time. (09-10)

15. Explain how living things interact with biotic and abiotic components of the environment (e.g., predation, competition, natural disasters and weather). (10)

16. Relate how distribution and abundance of organisms and populations in ecosystems are limited by the ability of the ecosystem to recycle materials and the availability of matter, space and energy. (10)

17. Conclude that ecosystems tend to have cyclic fluctuations around a state of approximate equilibrium that can change when climate changes, when one or more new species appear as a result of immigration or when one or more species disappear. (10)

G. Describe how human activities can impact the status of natural systems. (09-10)

18. Describe ways that human activities can deliberately or inadvertently alter the equilibrium in ecosystems. Explain how changes in technology/biotechnology can cause significant changes, either positive or negative, in environmental quality and carrying capacity. (10)

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Curriculum Map

Course Title: Pre-Chemistry	Month: 6 days	Academic Year: 2013-2014
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Essential Questions for this Unit:

1. What is science?
2. How does science work?
- 3.

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Nature of Science Unit	Science Inquiry & Application	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking	Scientific Method In Action WKS CONPTT WKS Nature of Science Quiz	Lab Safety WKS False Assumptions PPT Nature of Science Notes IV & DV WKS Scientific Method In Action WKS CONPTT Notes CONPTT WKS
Vocabulary:	Independent variable, dependent variable, CONPTT, scientific method, hypothesis, theory, law			

Course Title: Pre-Chemistry	Month: 22 days	Academic Year: 2013-2014
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Essential Questions for this Unit:

1. How is dimensional analysis used to problem solve?
2. Describing matter/evidence of a chemical change.

3. How is matter classified?

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Chapter 1	Phases of Matter	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking	Pop Quizzes Worksheets Lab Write-Up Chapter Test	Holt Chemistry Textbook Chapter Notes Pop Quizzes Popcorn Lab Metrics & Measurement WKS Dimensional Analysis (Factor Label) Worksheets from Web Chapter Test
Vocabulary:	Chemical, chemical reactions, states of matter, reactant, product, matter, volume, mass, weight, quantity, unit, conversion factor, physical property, density, chemical property, atom, pure substance, element, molecule, compound, mixture, homogeneous, heterogeneous			

Course Title: Pre-Chemistry	Month: 8 days	Academic Year: 2013-2014

Essential Questions for this Unit:

1. How and why are significant figures used?
2. How are accuracy and precision applied to science?
3. How is energy used describe matter?

Unit/Time	Core-Standards	Instructional Strategies and	Assessment	Resources
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Frame		Instructional Strategies and Differentiation		
Chapter 2	<p>Use technology and mathematics to improve investigations and communications</p> <p>Melting and boiling points</p> <p>Chemical reactions - energy</p>	<p>Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking</p>	<p>Pop Quizzes</p> <p>Worksheets</p> <p>Chapter Test</p>	<p>Holt Chemistry Textbook</p> <p>Chapter Notes</p> <p>Accuracy & Precision Notes</p> <p>Rounding Notes</p> <p>Various Significant Figure Worksheets</p> <p>Chapter Test</p>
Vocabulary:	Energy, physical change, chemical change, evaporation, endothermic, exothermic, law of conservation of energy, heat, kinetic energy, temperature, specific heat, accuracy, precision, significant figure			

Course Title: Pre-Chemistry	Month: 23 days	Academic Year: 2013-2014

Essential Questions for this Unit:

1. Substances are made of atoms.
2. Structure of atoms.
3. Electron configuration
4. Counting atoms

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Chapter 3	<p>Atomic structure</p> <p>Representing compounds</p>	<p>Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast,</p>	<p>Pop Quizzes</p> <p>Worksheets</p>	<p>Holt Chemistry Textbook</p>

	<p>Evolution of atomic models/theory</p> <p>Electrons</p> <p>Electron configurations</p> <p>Molar calculations</p>	<p>interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking</p>	<p>Lab Activity</p> <p>Chapter Test</p>	<p>Chapter Notes</p> <p>Pop Quizzes</p> <p>Atomic Structure Worksheets</p> <p>Electron Configuration Worksheets</p> <p>Molar Mass Worksheets</p> <p>Molar Conversion Worksheets</p> <p>Bean & Mole Lab</p> <p>Chapter Test</p> <p>Calculators</p>
Vocabulary:	<p>Law of definite proportions, law of conservation of mass, law of multiple proportions, electron, nucleus, proton, neutron, atomic number, mass number, isotope, orbital, electromagnetic spectrum, ground state, excited state, Pauli exclusion principle (indirectly), electron configuration, aufbau principle (indirectly), atomic mass, mole, molar mass, Avogadro's number</p>			

Course Title: Pre-Chemistry	Month: 10 days	Academic Year: 2013-2014

Essential Questions for this Unit:

1. How are elements organized?
2. Tour/overview of the periodic table
3. Trends in the periodic table

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Chapter 4	Periodic Table Properties Periodic Table Trends	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking	Pop Quizzes Worksheets Periodic Table Activity Chapter Test	Holt Chemistry Textbook Periodic Table Activity Chapter Notes Pop Quizzes Chapter Test
Vocabulary:	Periodic law, valence electron, group, period, main-group element, alkali metal, alkaline-earth metal, halogen, noble gas, transition metal, lanthanide, actinide, alloy, ionization energy, electron shielding, bond radius, electronegativity			

Course Title: Pre-Chemistry	Month:	Academic Year: 2013-2014

Essential Questions for this Unit:

1. Simple ions
2. Ionic bonding and salts
3. Names and formulas of ionic compounds

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Chapter 5	Intramolecular chemical bonding – Ionic Representing compounds – formula writing Representing compounds – nomenclature	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking	Pop Quizzes Worksheets Chapter Test	Holt Chemistry Textbook

	Intermolecular chemical bonding: <ul style="list-style-type: none"> • Types and strengths • Implications for properties of substances <ul style="list-style-type: none"> ○ Melting and boiling point ○ Solubility 			
Vocabulary:	Octet rule, ion, cation, anion, salt, lattice energy, crystal lattice, unit cell, polyatomic ion			

Course Title: Pre-Chemistry		Month:	Academic Year: 2013-2014	

Essential Questions for this Unit:

1. Covalent bonds
2. Drawing and naming molecules
3. Molecular shapes

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Chapter 6	Intramolecular chemical bonding – Polar/Covalent Representing compounds – formula writing Representing compounds – nomenclature Representing compounds – models and shapes (Lewis structures & molecular geometries)	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking	Pop Quizzes Worksheets Chapter Test	Holt Chemistry Textbook

	Intermolecular chemical bonding: <ul style="list-style-type: none"> • Types and strengths • Implications for properties of substances <ul style="list-style-type: none"> ○ Melting and boiling point ○ Solubility 			
Vocabulary:	Covalent bond, molecular orbital, bond length, bond energy, nonpolar covalent bond, polar covalent bond, dipole, valence electron, Lewis structure, unshared pair, single bond, double bond, triple bond, resonance structure, VSEPR theory			

Course Title: Pre-Chemistry		Month:	Academic Year: 2013-2014	

Essential Questions for this Unit:

1. Avogadro's number and molar conversions
2. Relative atomic mass and chemical formulas
3. Formulas and percentage composition

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Chapter 7	Representing compounds – formula writing Stoichiometry - Molar calculations Quantifying matter	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking	Pop Quizzes Worksheets Chapter Test	Holt Chemistry Textbook
Vocabulary:	Mole, Avogadro's number, molar mass, average atomic mass, percentage composition, empirical formula, molecular			

	formula
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Course Title: Pre-Chemistry		Month:	Academic Year: 2013-2014	

Essential Questions for this Unit:

1. Describing chemical reactions
2. Balancing chemical equations
3. Classifying chemical reactions

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Chapter 8	Representing compounds – formula writing Representing compounds – nomenclature Quantifying matter Chemical reactions – types of reactions	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking	Pop Quizzes Worksheets Chapter Test	Holt Chemistry Textbook
Vocabulary:	Chemical reaction, chemical equation, coefficient, combustion reaction, synthesis reaction, decomposition reaction, activity series, double-displacement reaction			

Course Title: Pre-Chemistry		Month:	Academic Year: 2013-2014	

Essential Questions for this Unit:

1. Calculating quantities in reactions

2. Limiting reactants and percentage yield

3.

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Chapter 9 & Chapter 13, section 2	Quantifying matter Stoichiometry - Molar calculations Stoichiometry - Solutions Stoichiometry – Limiting reagents	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking	Pop Quizzes Worksheets Chapter Test	Holt Chemistry Textbook
Vocabulary:	Stoichiometry, limiting reactant, excess reactant, actual yield, concentration, molarity			

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Curriculum Map

Course Title: Science III	Month: 6 days (approx.)	Academic Year: 2013-2014
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Essential Questions for this Unit:

1. What is science?
2. How does science work?
- 3.

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Nature of Science Unit	Science Inquiry & Application	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking	Scientific Method In Action WKS CONPTT WKS Nature of Science Quiz	Lab Safety WKS False Assumptions PPT Nature of Science Notes IV & DV WKS Scientific Method In Action WKS CONPTT Notes CONPTT WKS
Vocabulary:	Independent variable, dependent variable, CONPTT, scientific method, hypothesis, theory, law			

Course Title: Science III	Month: 9 weeks	Academic Year: 2013-2014
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Essential Questions for this Month: 1. How do chemists describe matter?

2. How does the periodic table help explain and predict the properties of chemical elements?
3. What is the role of chemistry in the life cycle of metals?
4. How is conservation of matter demonstrated in the use of resources?

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Materials Unit	Periodic table – properties & trends Quantifying matter Atomic Structure – electrons Intramolecular chemical bonding - ionic Atoms – ions Chemical reactions Representing compounds – formula writing Energy resources –mining and resource extraction & resource availability	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking, lab time	Labs Practice worksheets Quizzes Tests	In class text book Reading worksheets Practice/m astery worksheets Lab handouts
Vocabulary:	Currency, data (quantitative & qualitative), observation, physical properties, physical change, chemical properties, chemical change, combustion, luster, ductile, particulate level, matter, atoms, element, compound, substance, molecule, chemical bonds, chemical symbols, chemical formula, subscript, chemical equations, chemical reactions, reactants, products, balanced, macroscopic, models (science), metals, nonmetals, metalloids, conductor, nonconductor, periodic table, protons, electrons, neutrons, atomic number, nucleus, mass number, isotopes, periods, periodic relationship, group/family, alkali metal family, noble gas family, halogen family, periodic properties, ionic compounds, ions, crystal, anion, cation, formula unit, polyatomic ion, activity series, atmosphere, hydrosphere, lithosphere, deposits, minerals, percent composition, mole, molar mass, refined, material's life cycle, Law of Conservation of Matter, balanced chemical equation, coefficients, control (experiment), alloy, sustainability, renewable resources, nonrenewable resources,			
Course Title: Science III		Month: 9 weeks	Academic Year: 2013-2014	

Essential Questions for this Month: 1. How can the physical properties of petroleum be explained by its molecules and their interactions?

2. Why are carbon-based molecules so versatile as chemical building blocks?

3. What are the benefits and consequences of burning hydrocarbons?
 4. What alternatives to petroleum are available for burning and building?

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Energy Unit	Intramolecular chemical bonding – covalent bonding Atoms - models Chemical reactions – energy Conservation of energy Transfer and transformation of energy Energy resources Air and air pollution Climate change	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking, lab time	Labs Practice worksheets Quizzes Tests	In class text book Reading worksheets Practice/mastery worksheets Lab handouts
Vocabulary:	Viscosity, crude oil, hydrocarbons, fossil fuels, carbon footprint, distillation, fractions, fractional distillation, bottoms, intermolecular forces, polar molecules, organic chemistry, carbon chain, shells (electrons), valence electrons, covalent bond, single covalent bond, Lewis dot structures, potential energy, kinetic energy, chemical energy, thermal energy, endothermic, exothermic, Law of Conservation of Energy, carbon cycle, global warming, cellular respiration, biomolecules, energy efficiency, cracking, octane rating, oxygenated fuels, oil shale, oil sands, biodiesel, compressed natural gas, liquefied petroleum gas, hybrid vehicles, and fuel cell			
Course Title: Science III		Month: 9 weeks	Academic Year: 2013-2014	

Essential Questions for this Month: 1. What makes water unique?

2. Why do some substances readily dissolve while others do not?
 3. How do we describe chemical behavior in aqueous solutions?
 4. How is chemistry applied to produce safe drinking water?

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Water Unit	Water and water pollution Potable water quality, use, and	Flexible grouping, cooperative learning, read & summarize text, outlines, compare &	Labs Practice worksheets	In class text book

	availability Classification of matter	contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking, lab time	Quizzes Tests	Reading worksheets Practice/m astery worksheets Lab handouts
Vocabulary:	Electronegativity, cohesive forces, mixture, heterogeneous mixtures, suspension, Tyndall effect, colloid, homogeneous, solutions, solute, solvent, water (hydrologic) cycle, direct water use, indirect water use, histogram, range, mean, median, surface water, groundwater, aquifer, solution concentration, ppm, saturated solution, solubility, solubility curve, metabolism, confirming test, qualitative test, quantitative test, blank, reference solution, neutralization, neutral solution, acidic solution, basic solution, strong acid, strong base, buffer, adsorbs, adhesive forces, percent recovery, filtration, filtrate, drinking-water treatment, and carcinogens			
Course Title: Science III		Month: 9 weeks (time dependent)	Academic Year: 2013-2014	

- Essential Questions for this Month:**
- 1. How is food energy stored, transferred, and released?**
 - 2. What role does molecular structure play in metabolism of carbohydrates and fats?**
 - 3. Why are protein molecules essential to living organisms?**
 - 4. What roles do vitamins, minerals, and additives play in foods we eat?**

Unit/Time Frame	Core-Standards	Instructional Strategies and Differentiation	Assessment	Resources
Food Unit	Soil and land – land use and land management Food production and availability Movement of matter and energy through the hydrosphere, lithosphere, atmosphere, and biosphere Cellular processes – photosynthesis & cellular	Flexible grouping, cooperative learning, read & summarize text, outlines, compare & contrast, interpret charts & graphs, synthesize answers to problems, analyze problems for relevant information, and engage in critical thinking, lab time	Labs Practice worksheets Quizzes Tests	In class text book Reading worksheets Practice/mastery worksheets

	respiration			Lab handouts
Vocabulary:	Food groups, calorimetry, calorimeter, photosynthesis, cellular respiration, carbohydrate, monosaccharides, disaccharides, polysaccharides, glycogen, fats, fatty acids, saturated fats, unsaturated fats, monounsaturated fat, polyunsaturated fat, arterial plaque, atherosclerosis, hydrogenation, protein, enzyme, amino acids, peptide bonds, condensation (dehydration) reaction, essential amino acids, complete protein, complementary proteins, substrate, active sit, vitamins, coenzymes, water/fat soluble vitamins, endpoint, titrant, minerals, major/macrominerals, trace/microminerals, and food additives			

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