

Curriculum Map 2019-20 Life Science 7 (may change order slightly)

| Time /Month | Unit | Content | Standard(s) | Skills |
|-------------|-------------------|--|-----------------------------|--|
| 20 days | Scientific Method | <ul style="list-style-type: none"> - Science prior knowledge - Lab safety - Lab tools/equipment - Decimals/ metric conversions - Graphing (bar graphs, pie charts and line graphs) - Scientific method - Observation, inference and prediction - Qualitative vs quantitative - Subjective vs objective - Finding evidence - Communicating observations - Theory vs law | Framework skills | <ul style="list-style-type: none"> - Show what I know about Science (what science is and isn't, who does science, how does science apply to me) and the world around me - Determine appropriate behavior /rules and procedures for lab safety - Identify lab equipment, tell what it is used for/ measures, determine appropriate metric units and properly use the equipment - Convert metric measurements - Make, use and interpret different types of graphs - Put the steps of the scientific method in order and justify the order - Determine the difference between observation, inference and prediction - Tell if an observation is qualitative vs quantitative, and subjective vs objective - Analyze a scenario using observations and inference to locate evidence - Effectively communicate observations accurately - Practice using the scientific method - design an experiment - Describe how a theory and law are different from one another and provide examples of each. - Determine the difference between independent and dependent variables |
| 20 days | Cells | <ul style="list-style-type: none"> - Needs and characteristics of living things - Levels of organization - Cell organelles - Cell theory - Prokaryotic vs Eukaryotic - Microscope parts - How to use a microscope - Microscope history | MS-LS1- 1, 2, 6,7 LS2 -1 | <ul style="list-style-type: none"> - Describe the characteristics and needs of living things - Determine how living things are organized and give examples - Determine the location, structure and function/ processes of cell organelles (plant and animal) - Compare the cell structures of bacteria, plants and animals to identify the similarities and differences between the basic cell structures - Identify the structures and functions of the microscope - Calculate the total magnification of various objective lens - Use a microscope properly - Compare various plant and animal cells - Determine how materials are transported across the cell membrane |

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| | | <ul style="list-style-type: none"> - Animal vs plant cell organelles - Transport through membranes (active vs passive transport) - Cellular respiration vs photosynthesis - Mitosis(cell division) | | <ul style="list-style-type: none"> - Determine the difference between passive and active transport - Compare/ contrast cellular respiration and photosynthesis - Explain how cells make new cells by cell division (mitosis) |
| 30 days | Human body | <ul style="list-style-type: none"> - Roots, suffixes and prefixes associated with the human body - Body systems functions, structures and how they relate - Four tissue types - Integumentary system - Muscular system - Skeletal system - Digestive system - Cardiovascular system - Lymphatic system - Respiratory system - Urinary/Excretory system - Reproductive system - Endocrine system - Nervous system | MS LS1- 2, 3, 7, 8 | <ul style="list-style-type: none"> - Identify and apply roots, suffixes and prefixes associated with the human body - Identify the various body systems, their functions and how they are related - Match organs and structures with the appropriate body system(s) - Identify the four types of tissue in the human body - Predict which part of the body is the most sensitive and explain why - Determine fingerprint patterns and analyze various types/distribution of patterns among the class - Conduct an experiment and analyze data to determine if blinking is voluntary or involuntary - Identify various types of joints and analyze muscle action - Describe how food moves through the digestive system - Determine what pulse rate tells about how the heart works - Determine heart rate before and after various activities - Compare the amount of air taken in during various breathing exercises - Create a working model of the kidney - Experiment to determine reaction time - Construct a model of the brain |
| 23 days | Genetics | <ul style="list-style-type: none"> - Inherited characteristics - Gregor Mendel's contributions - Dominant vs recessive - Genotypes and phenotypes - Using punnett squares | MS LS1- 1, 2 LS3- 1, 2 | <ul style="list-style-type: none"> - Determine how genes play a role in inherited characteristics - Describe the contributions of Gregor Mendel in the area of genetics - Compare and contrast dominant and recessive genes and give examples of each - Determine the genotype and phenotype of various gene combinations - Determine possible offspring genetic combinations using punnett squares - Identify whether a gene combination is homozygous (purebred) or |

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| | | <ul style="list-style-type: none"> - Homozygous and heterozygous - Passing traits - Nitrogen bases and the Base-pair rule for DNA - Extracting DNA - Translation - Protein synthesis - meiosis/mitosis - Hybridization - Genetic engineering | | <p>heterozygous (hybrid)</p> <ul style="list-style-type: none"> - Determine how traits are passed from parent to offspring - Determine genetic traits then apply that information to predict the possible genotype and phenotype of the parents - Use punnett squares to determine the genotype and phenotype for traits that show incomplete dominance, codominance, multiple alleles and polygenic inheritance (optional) - Determine how traits are passed from parent to offspring - model a strand of DNA using the rules of base pairing - Extract DNA from my cheek cells - Determine how DNA translates to physical characteristics - Model protein synthesis by combining amino acids to build proteins using various sequences of DNA - Explain how gametes (sex cells) pass on characteristics using meiosis - compare/ contrast the processes of mitosis and meiosis - Determine how common certain phenotypes are within a population - Demonstrate the passing of traits from parent to offspring - Demonstrate how to trace a trait through a family tree - Model the process of hybridization - research/ discuss methods of genetic engineering |
| 27 days | Ecology | <ul style="list-style-type: none"> - Biotic vs abiotic - Levels of organization within an ecosystem/biome - producers/ autotrophs and consumers/ heterotrophs (various types) - Food chains - Food webs - Energy pyramids - Relationships <ul style="list-style-type: none"> - Predation - Competition over limited resources - Symbiosis | MS LS2- 1, 2, 3, 4, 5, 6 | <ul style="list-style-type: none"> - Describe how living things interact with each other with examples - Determine how organisms are organized by their interactions - Identify biotic and abiotic factors - Create a model of each level of organization - Identify the various types of organisms within an ecosystem - Analyze food chains, food webs, and energy pyramids to see how organisms interact within an ecosystem - Create food chains and food webs - Calculate the amounts of energy that are transferred or lost in an ecosystem (food pyramid) - Make a model to demonstrate how energy is transferred through a food chain - Explain the types of relationships that exist between organisms - Research a symbiotic relationship between two organisms and create a classified ad based on that research - Analyze data demonstrating the effects of organism interaction on population size |

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| | | <ul style="list-style-type: none"> types - Biomes-environmental issues | | <ul style="list-style-type: none"> - Identify the characteristics of various biomes - Reflect on various environmental issues that are connected with the various biomes |
| 14 days | Evolution | <ul style="list-style-type: none"> - Mutations - Adaptations - Charles Darwin - Theory of evolution - Natural selection - Camouflage - Concealing coloration - Disruptive coloration - Mimicry - Radioactive decay - Fossils - Evidence of evolution <ul style="list-style-type: none"> - Homologous structures - Missing links - Similarities in DNA - Embryological evidence | MS LS3-1 LS4 1, 2, 3, 4, 6 | <ul style="list-style-type: none"> - Explain how physical characteristics of organisms change over generations - Demonstrate how species change over time - Identify various adaptations and tell how they help organisms - Observe how the shape of a bird's beak determines what it eats - Demonstrate how camouflage can help an organism to survive in its environment - Simulate camouflage in animals - Explain the factors that affect natural selection - Model evolution using an interactive website - Explain what a fossil is and how it forms - Calculate the age of fossils using radioactive dating - Provide evidence of evolution by tracing the history of whales |
| 35 days | Classification | <ul style="list-style-type: none"> - Scientific names/binomial nomenclature - Taxonomy - Latin and Greek root words - Level of classification from domain to species - Dichotomous keys - Cladogram - Viruses - Bacteria/Monera - Protists - Fungi | MS LS1- 1, 2, 3, 4 LS4 (all) | <ul style="list-style-type: none"> - Demonstrate how scientists group things according to their characteristics - Demonstrate how to name an organism using scientific names/binomial nomenclature - Determine the levels of classification to show relationships with other organisms - Create names for organisms based on observable characteristics using Latin and Greek root words - Create a dichotomous key - Create a cladogram showing evolutionary relationships - Identify a virus type using a dichotomous key - Identify the characteristics/ main structures of a virus - Explain how viruses reproduce - Demonstrate how a viruses/disease spreads throughout a population |

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| | | <ul style="list-style-type: none"> - Lichens - Non-vascular plants - Vascular plants | | <ul style="list-style-type: none"> - Identify the characteristics/ main structures of bacteria - Identify bacteria type using a dichotomous key - Explain the various ways bacteria can get their energy, reproduce and move - Identify the characteristics/ main structures of protists - Identify protist type using a dichotomous key - Explain the various ways protists can get their energy, reproduce and move - Create a mini-informational poster about a selected organism - Identify the characteristics/ main structures of fungi - Identify fungi type using a dichotomous key - Explain the various ways fungi can get their energy and reproduce - Identify the characteristics/ main structures of non-vascular plants - Identify non-vascular plant type using a dichotomous key - Explain the various ways non-vascular plants can reproduce - Identify the characteristics/ main structures of vascular plants - Identify vascular plant type using a dichotomous key - Explain the various ways vascular plants can get their energy and reproduce - Identify the characteristics/ main structures of animals - Identify animal type using a dichotomous key - Explain the various ways animals can get their energy, reproduce and move |
| | Final | | | |