

<b>Stage 3: OVERALL SCIENCE SCHEME MYP 1, 2, 3</b>			
<b>Term 1</b>	<b>MYP 1</b>	<b>MYP 2</b>	<b>MYP 3</b>
<b>content</b>	<b>Astronomy</b>	<b>Exploring and Classifying Life</b>	<b>Cell Structure</b>
<b>Unit Question</b>	<b>Where are we?</b>	<b>What is alive?</b>	<b>Why are cells the basic unit of life?</b>
<b>Significant concept</b>	New technology has come from exploring the solar system. The planet that you live on is uniquely capable of sustaining life. Studying the outer planets will help scientists understand Earth. Comets, asteroids, and most meteorites are very old. Scientists can learn about the early solar system by studying them.	All living things, including you, have many of the same traits. You can use scientific methods to try to find out about events that happened long ago or just last week. You can even use them to predict how something will behave in the future. Knowing how living things are classified will help you understand the relationships that exist among all living things.	The cell is the basic building block of life and all living organisms are made of one or more cells which are made up of smaller organelles.
<b>AOI</b>	Human Ingenuity, Environment	Human Ingenuity	Health and Social Education, Approaches to Learning, Human Ingenuity
<b>ATL</b>	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.	Organizational skills and attitudes towards work, collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.
<b>Scientific content</b>	Examine Earth's physical characteristics. Differentiate between rotation and revolution. Discuss what causes seasons to change. Compare models of the solar system. Explain that gravity holds planets in orbits around the Sun. List the inner planets in order from the Sun. Describe each inner planet. Compare and contrast Venus and Earth. Describe the characteristics of Jupiter, Saturn, Uranus, and Neptune. Explain how Pluto differs from the other outer planets. Describe how comets change when they approach the Sun. Distinguish among comets, meteoroids, and asteroids. Explain that objects from space sometimes impact Earth.	Distinguish between living and nonliving things. Identify what living things need to survive? Describe experiments about spontaneous generation. Explain how scientific methods led to the idea of biogenesis. Describe how early scientists classified living things. Explain how similarities are used to classify organisms. Explain the system of binomial nomenclature. Demonstrate how to use a dichotomous key	Identify names and functions of each part of a cell. Explain how important a nucleus is in a cell. Compare tissues, organs, and organ systems. Summarize the discoveries that led to the development of the cell theory. Explain how a virus makes copies of itself. Identify the benefits of vaccines. Investigate some uses of viruses.
<b>Objectives</b>	B - Students should be able to demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.  C - Students should show their understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations.	B - Students should be able to demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.  C - Students should show their understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations.  F - Students are expected to: carry out scientific investigations using materials and techniques skilfully and safely and showing respect for the living and non-living environment , work effectively as a member of a team,	B. Communication in science- Students should be able to demonstrate understanding when communicating scientific information.  C. Knowledge and understanding of science- Students should show their understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.  C - Students should show their understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations.

		collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.	D - Students are expected to design and carry out scientific investigations independently.  F. Attitudes in science - work effectively as a member of a team, collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.
<b>Assessments</b>	B -Make a 3D model or poster. B- Make a PowerPoint of a specific planet. C -Written examination	B - Complete a drawing demonstrating the rules of life. C - Written examination B - PowerPoint on taxonomy- kingdoms and domains	B. Students will create a cell booklet discussing structures/organelles as well as incorporating drawings and images. Students will also create and perform a skit about cells. C. Students will take a end of unit test  D. Students will extract DNA from the cells of fruit. F. Students will do a self and peer assessment of their cell group.
<b>Links</b>	Math – Astronomical Units, Scale	Humanities - History	Language A- Writing cell book
<b>Term 2 Content</b>	<b>Evolution of the Earth</b>	<b>Chemistry of Matter</b>	<b>Human Body System</b>
<b>Unit Question</b>	<b>How have chemical, biological, and geologic changes affected the Earth over geologic time?</b>	<b>What is matter?</b>	<b>How does the health of one of my body systems (skeletal, muscular, digestive, circulatory, respiratory, nervous, or reproductive) affect the health of my entire body?</b>
<b>Significant Concept</b>	The combination of ideas from continental drift, seafloor spreading, and many other discoveries led to the theory of plate tectonics. Fossils, along with the relative ages and absolute ages of rocks, provide evidence of past life, climates, and environments on Earth. Scientists use units of geologic time to interpret the history of life on Earth.	Atoms contain protons and neutrons in a very small, dense nucleus and electrons in a larger area around the nucleus. Elements are arranged in order of increasing atomic number on the periodic table. When atoms combine, they become more stable. Atoms are not created or destroyed in chemical reactions—they are just rearranged.	The human body is made of organ systems that interact with one another and impact the health of the entire body.
<b>AOI</b>	Environment, Human Ingenuity	Environment, Human Ingenuity,	Health and Social Education, Human Ingenuity, Community and Service
<b>ATL</b>	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.
<b>Scientific Content</b>	Explain how geologic time can be divided into units. Relate changes of Earth's organisms to divisions on the geologic time scale. Describe how plate tectonics affects species. Identify characteristic Precambrian and Paleozoic life-forms. Draw conclusions about how species adapted to changing environments in Precambrian time and the Paleozoic Era. Describe changes in Earth and its life-forms at the end of the Paleozoic Era.	Explain how scientists discovered subatomic particles. Explain how today's model of the atom developed. Describe the structure of the nuclear atom. Explain that all matter is made up of atoms. Describe the process of radioactive decay. Explain what is meant by half-life. Describe how radioactive isotopes are used. Describe the history of the periodic table. Interpret an element key. Explain how the periodic table is organized. Recognize the properties of representative elements.	Identify the parts and functions of blood. Explain why blood types are checked before a transfusion. Give examples of diseases of blood. Compare and contrast arteries, veins, and capillaries. Explain how blood moves through the heart. Identify the functions of the pulmonary and systemic circulation systems. Describe functions of the lymphatic system. Explain the difference between an antigen and an antibody. Compare and contrast active and passive immunity. Describe the work of Pasteur, Koch, and Lister in the

	<p>Compare and contrast characteristic life-forms in the Mesozoic and Cenozoic Eras.</p> <p>Explain how changes caused by plate tectonics affected organisms during the Mesozoic Era.</p> <p>Identify when humans first appeared on Earth.</p> <p>List the conditions necessary for fossils to form.</p> <p>Describe several processes of fossil formation.</p> <p>Explain how fossil correlation is used to determine rock ages.</p> <p>Determine how fossils can be used to explain changes in Earth's surface, life forms, and environments.</p> <p>Describe methods used to assign relative ages to rock layers.</p> <p>Interpret gaps in the rock record.</p> <p>Give an example of how rock layers can be correlated with other rock layers.</p> <p>Identify how absolute age differs from relative age.</p> <p>Describe how the half-lives of isotopes are used to determine a rock's age.</p> <p>Describe the hypothesis of continental drift.</p> <p>Identify evidence supporting continental drift.</p> <p>Explain seafloor spreading.</p> <p>Recognize how age and magnetic clues support seafloor spreading.</p> <p>Compare and contrast different types of plate boundaries.</p> <p>Explain how heat inside Earth causes plate tectonics.</p> <p>Recognize features caused by plate tectonics</p>	<p>Identify uses for the representative elements.</p> <p>Classify elements into groups based on similar properties.</p> <p>Identify properties of some transition elements.</p> <p>Distinguish lanthanides from actinides.</p> <p>Identify how electrons are arranged in an atom.</p> <p>Compare the relative amounts of energy of electrons in an atom.</p> <p>Compare how the arrangement of electrons in an atom is related to its place in the periodic table.</p> <p>Compare and contrast ionic and covalent bonds.</p> <p>Distinguish between compounds and molecules.</p> <p>Identify the difference between polar and nonpolar covalent bonds.</p> <p>Interpret chemical shorthand.</p> <p>Determine whether or not a chemical reaction is occurring.</p> <p>Determine how to read and understand a balanced chemical equation.</p> <p>Examine some reactions that release energy and others that absorb energy.</p> <p>Explain the law of conservation of mass.</p> <p>Determine how to describe and measure the speed of a chemical reaction.</p> <p>Identify how chemical reactions can be sped up or slowed down.</p>	<p>discovery and prevention of disease.</p> <p>Identify diseases caused by viruses and bacteria.</p> <p>Explain how HIV affects the immune system.</p> <p>Define non-infectious diseases and list their causes.</p> <p>Explain what happens during an allergic reaction.</p> <p>Distinguish the differences between mechanical digestion and chemical digestion.</p> <p>Identify the organs of the digestive system and what takes place in each.</p> <p>Explain how homeostasis is maintained in digestion.</p> <p>Distinguish among the six classes of nutrients.</p> <p>Identify the importance of each type of nutrient.</p> <p>Explain the relationship between diet and health.</p> <p>Describe the functions of the respiratory system.</p> <p>Explain how oxygen and carbon dioxide are exchanged in the lungs and in tissues.</p> <p>Identify the pathway of air in and out of the lungs.</p> <p>Explain the effects of smoking on the respiratory system.</p> <p>Distinguish between the excretory and urinary systems.</p> <p>Describe how the kidneys work.</p> <p>Explain what happens when urinary organs don't work.</p> <p>Distinguish between the epidermis and dermis of the skin.</p> <p>Identify the functions of the skin.</p> <p>Explain how skin protects the body from disease and how it heals itself</p> <p>Identify the major function of the muscular system.</p> <p>Compare and contrast the three types of muscles.</p> <p>Explain how muscle action results in the movement of body parts.</p> <p>Identify five functions of the skeletal system.</p> <p>Compare and contrast movable and immovable joints.</p> <p>Describe the basic structure of a neuron and how an impulse moves across a synapse.</p> <p>Compare and contrast the central and peripheral nervous systems.</p> <p>List the sensory receptors in each sense organ.</p> <p>Explain what type of stimulus each sense organ responds to and how.</p> <p>Explain how drugs affect the body</p> <p>Define how hormones function.</p> <p>Identify different endocrine glands and the effects of the hormones they produce.</p> <p>Describe how a feedback system works in your body.</p> <p>Identify the function of the reproductive system.</p> <p>Compare and contrast the major structures of the male and female reproductive systems.</p> <p>Sequence the stages of the menstrual cycle.</p> <p>Describe the fertilization of a human egg.</p> <p>List the major events in the development of an embryo and fetus.</p> <p>Describe the developmental stages of infancy, childhood, adolescence, and adulthood.</p>
<p><b>Objectives</b></p>	<p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes</p>	<p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and</p>	<p><b>A</b> - Understand the interdependence of science and society. Students are expected to discuss how science is applied and used to solve specific problems in life and society.</p>

	<p>and the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>E</b> - Organize and process data. Students should be able to organize and transform data by numerical calculations into diagrammatic form (tables, graphs and charts) and draw and explain appropriate conclusions.</p> <p><b>F</b> - Carry out scientific investigations using materials and techniques skillfully and safely and showing respect for the living and non-living environment, work effectively as a member of a team, collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.</p>	<p>the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>D</b> - Design and carry out scientific investigations independently.</p> <p><b>E</b> - Organize and process data. Students should be able to organize and transform data by numerical calculations into diagrammatic form (tables, graphs and charts) and draw and explain appropriate conclusions.</p> <p><b>F</b> - Carry out scientific investigations using materials and techniques skillfully and safely and showing respect for the living and non-living environment, work effectively as a member of a team, collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.</p>	<p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>D</b> - Design and carry out scientific investigations independently.</p> <p><b>F</b> - Carry out scientific investigations using materials and techniques skillfully and safely and showing respect for the living and non-living environment, work effectively as a member of a team, collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.</p>
<b>Assessments</b>	<p>B Constructing geologic Time scale C Written exam B Make a model of the three different types of plate movement E F Simulate radioactive decay B - Write a short/creative story about major changes on Earth and how it affected organisms. B - create a newspaper story describing the major evolutionary events and the most important organisms that lived in that era.</p>	<p>D, E –F States of matter lab D, E - Density lab D, E - Purify water lab C - Written exam B - Research the effects of pressure changes on the human body and write a report.</p>	<p>B -Report concerning changes in bioengineering A, B -Design a map showing frequencies of disease across the world. B - Write a story about the day in the life of a body system. Drawing showing changes in human development. C,D, F-Lab human physiology</p>
<b>Links</b>	Language A - writing	Math - algebra	Art - Drawing
<b>Term 3 Content</b>	The Interdependence of Life	Physical Interactions	Motion Forces and Energy
<b>Unit Question</b>	How is all life connected?	How do electrons flow?	What is motion?
<b>Significant Concept</b>	The diverse plants on Earth provide humans and other organisms with food, shelter, and oxygen. Organisms interact with both the living and nonliving parts of their environment. Many of Earth's resources are limited.	Electric charges are positive or negative and exert forces on each other. Moving electric charges produce magnetic fields. Waves transfer energy outward from a vibrating object.	The motion of an object can be described by its velocity. An object's motion changes if the forces acting on the object are unbalanced. A machine makes doing a job easier. Thermal energy flows from areas of higher temperature to areas of lower temperature.
<b>AOI</b>	Environment, Community and Service, HSE	Human Ingenuity, HSE, Environment	Human Ingenuity, Environment
<b>ATL</b>	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.
<b>Scientific Content</b>	Identify characteristics common to all plants. Explain which plant adaptations make it possible for plants to survive on land.	Describe how objects can become electrically charged. Explain how an electric charge affects other electric charges.	Define distance, speed, and velocity. Graph motion. Define acceleration.

	<p>Compare and contrast vascular and nonvascular plants. Distinguish between characteristics of seedless nonvascular plants and seedless vascular plants. Identify the importance of some nonvascular and vascular plants.</p> <p>Identify the characteristics of seed plants. Explain the structures and functions of roots, stems, and leaves.</p> <p>Describe the main characteristics and importance of gymnosperms and angiosperms.</p> <p>Compare similarities and differences between monocots and dicots.</p> <p>Identify biotic and abiotic factors in an ecosystem. Describe the different levels of biological organization. Explain how ecology and the environment are related. Identify the characteristics that describe populations. Examine the different types of relationships that occur among populations in a community. Determine the habitat and niche of a species in a community.</p> <p>Explain the difference between a food chain and a food web.</p> <p>Describe how energy flows through ecosystems. Examine how materials such as water, carbon, and nitrogen are used repeatedly. Compare renewable and non-renewable resources. List uses of fossil fuels. Identify alternatives to fossil fuel use. Describe types of air pollution. Identify causes of water pollution. Explain methods that can be used to prevent erosion. Recognize ways you can reduce your use of natural resources. Explain how you can reuse resources to promote conservation. Describe how many materials can be recycled.</p>	<p>Distinguish between electric conductors and insulators. Describe how electric discharges such as lightning occur. Relate voltage to the electrical energy carried by an electric current.</p> <p>Describe a battery and how it produces an electric current. Explain electrical resistance.</p> <p>Explain how voltage, current, and resistance are related in an electric circuit.</p> <p>Investigate the difference between series and parallel circuits.</p> <p>Determine the electric power used in a circuit. Describe how to avoid dangerous electric shock. Describe the behavior of magnets. Relate the behavior of magnets to magnetic fields. Explain why some materials are magnetic. Explain how electricity can produce motion. Explain how motion can produce electricity. Explain how waves transport energy.</p> <p>Distinguish among transverse, compressional, and electromagnetic waves.</p> <p>Describe the properties of waves. Describe reflection, refraction, and diffraction of waves. Describe how sound waves are produced. Explain how sound waves travel through matter. Describe the relationship between loudness and sound intensity. Explain how humans hear sound. Identify the properties of light waves. Describe the electromagnetic spectrum. Describe the types of electromagnetic waves that travel from the Sun to Earth. Explain human vision and color perception.</p>	<p>Predict what effect acceleration will have on motion. Define momentum. Explain why momentum might not be conserved after a collision.</p> <p>Predict motion using the law of conservation of momentum. Distinguish between balanced and net forces. Describe Newton's first law of motion. Explain how friction affects motion. Explain Newton's second law of motion. Explain why the direction of force is important. Identify the relationship between the forces that objects exert on each other. Recognize when work is done. Calculate how much work is done. Explain the relation between work and power. Explain how a machine makes work easier. Calculate the mechanical advantages and efficiency of a machine. Explain how friction reduces efficiency. Distinguish among the different simple machines. Describe how to find the mechanical advantage of each simple machine. Explain how temperature is related to kinetic energy. Describe three scales used for measuring temperature. Define thermal energy. Explain the difference between thermal energy and heat. Describe three ways thermal energy is transferred. Identify materials that are insulators or conductors. Describe what a heat engine does. Explain that energy can exist in different forms, but is never created or destroyed. Describe how an internal combustion engine works. Explain how refrigerators move thermal energy.</p>
<p><b>Objectives</b></p>	<p><b>A</b> - Understand the interdependence of science and society. Students are expected to discuss how science is applied and used to solve specific problems in life and society.</p> <p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>D</b> - Design and carry out scientific investigations</p>	<p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>D</b> - Design and carry out scientific investigations independently.</p> <p><b>E</b> - Organize and process data. Students should be able to organize and transform data by numerical calculations into</p>	<p><b>A</b> - Understand the interdependence of science and society. Students are expected to discuss how science is applied and used to solve specific problems in life and society.</p> <p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>D</b> - Design and carry out scientific investigations independently.</p>

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<b>Assessments</b>	<p>A, B -PowerPoint on effects of pollution on ecosystems worldwide</p> <p>A,B - Paper on biodiversity and environmental implications of humans</p> <p>D, E, F- Plant lab</p> <p>C - Exam</p>	<p>B - Construct a wave</p> <p>C,D - Design a musical instrument</p> <p>B - Draw a cartoon explaining electricity</p> <p>D,E, F - Electric circuits lab</p> <p>D, E, F - Light lab</p> <p>D, E, F - Sound lab</p> <p>C Exam</p>	<p>D,E - Motion of RC Car lab</p> <p>D,E,F - KNEX Roller Coaster lab</p> <p>D,E , F- Simple Machines lab</p> <p>C -Exam</p> <p>A, B - Paper describing how machines have affected the world</p> <p>B, C-Flip Book of Newton's Laws</p>
<b>Links</b>	Math – following energy flow	Math – geometry	Math - physics

Last modified April 2009

Term 1	MYP 4	MYP 5
Title	Cells	Cells
Guiding Question	What makes up life?	What makes up life?
<b>Significant Concept</b>	<b>A cell is the most basic unit of living organisms. No matter how complex an organism is, at its core it is a collection of cells. In many organisms, cells work together, forming more complex structures.</b>	<b>A cell is the most basic unit of living organisms. No matter how complex an organism is, at its core it is a collection of cells. In many organisms, cells work together, forming more complex structures.</b>
<b>AOI</b>	Health and Social Education, Human Ingenuity	Health and Social Education, Human Ingenuity
<b>ATL</b>	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.
<b>Subject content</b>	<p>Relate an atom's interactions with other atoms to its structure.</p> <p>Explain why water is important to life.</p> <p>Compare the role of biomolecules in organisms.</p> <p>Identify the parts of prokaryotic and eukaryotic cells.</p> <p>Identify the structure and function of the plasma membrane.</p> <p>Relate the structure of cell parts to their functions.</p> <p>You will discover how molecules are transported across the plasma membrane.</p> <p>Sequence the stages of cell division.</p> <p>Identify the relationship between the cell cycle and cancer.</p> <p>Recognize why organisms need a constant supply of energy and where that energy comes from.</p> <p>Identify how cells store and release energy as ATP.</p> <p>Describe the pathways by which cells obtain energy.</p> <p>Compare ATP production in mitochondria and in chloroplasts.</p>	<p>Relate an atom's interactions with other atoms to its structure.</p> <p>Explain why water is important to life.</p> <p>Compare the role of biomolecules in organisms.</p> <p>Identify the parts of prokaryotic and eukaryotic cells.</p> <p>Identify the structure and function of the plasma membrane.</p> <p>Relate the structure of cell parts to their functions.</p> <p>You will discover how molecules are transported across the plasma membrane.</p> <p>Sequence the stages of cell division.</p> <p>Identify the relationship between the cell cycle and cancer.</p> <p>Recognize why organisms need a constant supply of energy and where that energy comes from.</p> <p>Identify how cells store and release energy as ATP.</p> <p>Describe the pathways by which cells obtain energy.</p> <p>Compare ATP production in mitochondria and in chloroplasts.</p>
<b>Objectives</b>	<p><b>A</b> - Understand the interdependence of science and society. Students are expected to discuss how science is applied and used to solve specific problems in life and society.</p> <p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>D</b> - Design and carry out scientific investigations independently.</p> <p><b>E</b> - Organize and process data. Students should be able to organize and transform data by numerical calculations into diagrammatic form (tables, graphs and charts) and draw and explain appropriate conclusions.</p> <p><b>F</b> - Carry out scientific investigations using materials and techniques skilfully and safely and showing respect for the living and non-living environment, work effectively as a member of a team, collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.</p>	<p><b>A</b> - Understand the interdependence of science and society. Students are expected to discuss how science is applied and used to solve specific problems in life and society.</p> <p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>D</b> - Design and carry out scientific investigations independently.</p> <p><b>E</b> - Organize and process data. Students should be able to organize and transform data by numerical calculations into diagrammatic form (tables, graphs and charts) and draw and explain appropriate conclusions.</p> <p><b>F</b> - Carry out scientific investigations using materials and techniques skilfully and safely and showing respect for the living and non-living environment, work effectively as a member of a team, collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.</p>
<b>Assessments</b>	<p>B - Cell Song</p> <p>B - Journal from the point of view of an organelle</p>	<p>B - Cell Song</p> <p>B - Journal from the point of view of an organelle</p>

	B -Artistic Illustration of cell structures A- Paper on the formation of the cell theory A,B -Brochure educating people about cancer D, E, F -Egg cell lab C -Exam	B -Artistic Illustration of cell structures A- Paper on the formation of the cell theory A,B -Brochure educating people about cancer D,E -Egg cell lab C - Exam
<b>Links</b>	Music – Cell Song , Art- Cell Drawing, Language A -Cell Journal	Music – Cell Song , Art- Cell Drawing, Language A -Cell Journal
<b>Term 2</b>	<b>Heredity</b>	<b>The Human Machine</b>
<b>Guiding Question</b>	<b>What makes us unique?</b>	<b>How do cells work with each other?</b>
<b>Significant Concept</b>	Students gain an understanding of the transmission of traits in living things and how this can also be connected to current medical and social issues such as cloning and gene therapy. Students will understand the process of reproduction in plants and animals.	The organ systems of the human body coordinate to fulfill the body's basic survival needs. These include the uptake and distribution of oxygen, digestion of food, and the elimination of wastes. The coordination between these systems also allow humans to complete complex behaviors.
<b>AOI</b>	Community and Service, Human Ingenuity	Health and Social Education, Human Ingenuity, Community and Service
<b>ATL</b>	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.
<b>Subject content</b>	Describe vegetative reproduction in plants and animals. Explain the importance of meiosis in maintaining chromosome numbers and identify the stages of meiosis. Relate the process of fertilization in flowering plants to their successful domination of land environments. Compare external and internal fertilization. Discuss the influence of hormones on the human male and female reproductive systems. Explain the roles of heredity and environment in organism development. Explain the relationship among alleles, genes, and chromosomes. Apply the principles of probability to genetics. Explain Mendel's principles of segregation and independent assortment. Give examples of how sex is determined in several organisms. Determine the inheritance of sex-linked traits. Explain linked genes and recognize how X-linked traits differ from other linked traits. Analyze the inheritance patterns of traits with incomplete dominance and codominance. Evaluate the importance of plant and animal breeding to humans. Summarize the steps used to engineer transgenic organisms. Analyze how mapping the human genome is benefitting human life.	Interpret the structure and functions of the integumentary system. Identify the functions of the skeletal system. Classify the different types of muscles in the body. Interpret the functions of the digestive system. Outline the journey of a meal through the digestive system. Identify different nutrients and their uses in the body. Describe how internal feedback mechanisms regulate the release of hormones. Analyze how endocrine hormones control internal body processes and help maintain homeostasis of the body. Relate the structure of a nerve cell to the transmission of a nerve signal. Identify the senses and their signal pathways. Compare and contrast various types of drugs and their effects on the nervous system. Identify the functions of the respiratory system and explain the mechanics of breathing. Describe the structure and function of the different types of blood cells and trace the pathway of blood circulation through the body. Describe the structure and function of the urinary system. Identify and describe the anatomy, control, and functions of the male and female reproductive systems. Distinguish the stages of development before birth. Summarize the processes of birth, growth, and aging. Describe how infections are transmitted and what causes the symptoms of diseases. Explain the various types of innate and acquired immune responses. Compare antibody and cellular immunity.
<b>Objectives</b>	<b>A</b> - Understand the interdependence of science and society. Students are expected to discuss how science is applied and used to solve specific problems in life and society.  <b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.  <b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific	<b>A</b> - Understand the interdependence of science and society. Students are expected to discuss how science is applied and used to solve specific problems in life and society.  <b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.  <b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.

	<p>information.</p> <p><b>D</b> - Design and carry out scientific investigations independently.</p> <p><b>F</b> - Carry out scientific investigations using materials and techniques skilfully and safely and showing respect for the living and non-living environment, work effectively as a member of a team, collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.</p>	<b>D</b> - Design and carry out scientific investigations independently.
<b>Assessments</b>	<p>A, B, C - Debate on cloning and genetic engineering</p> <p>B - PowerPoint on genetic disorders</p> <p>B - Family heredity poster and paper</p> <p>D- Punnet square of possible blood types for a family</p> <p>C, D F-Extract DNA from a strawberry sample</p> <p>A, B - Research the contributions of each of scientists and tell how each played a role in discovering the structure of DNA.</p>	<p>B- Written story about a journey through the digestive system</p> <p>C,D -Plan and conduct an investigation to determine what factors have the greatest affect on heart rate</p> <p>B - Create a human skeleton from assorted materials.</p> <p>B, C -Draw a picture of the different stages of childbirth and development.</p> <p>B - Develop a brochure on transmission of infections and explanation of symptoms.</p> <p>C, D -Complete owl pellet dissection</p> <p>C - Create a fact sheet for each one of the systems covered</p> <p>A, B - Write a paper discussing how some medicine has affected the peoples of the world.</p>
<b>Links</b>	Math - probabilities	Language A – Story
<b>Term3</b>	Change Through Time	Ecology
<b>Guiding Question</b>	Why do organisms change?	What is the community of Earth?
<b>Significant Concept</b>	<b>Life on Earth has a history of change that is called evolution. An enormous variety of fossils, such as those of early birds, provide evidence of evolution. Genetic studies of populations of bacteria, protists, plants, insects, and even humans provide further evidence of the history of change among organisms that live or have lived on Earth.</b>	<b>Everything on Earth—air, land, water, plants, and animals—is connected.</b>
<b>AOI</b>	Environment, Community and service, Human ingenuity	Community and service, Health and Social Education, Environment
<b>ATL</b>	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.	Organizational skills and attitudes towards work , collaborative skills, communication , information literacy, reflection, problem solving and thinking skills , subject-specific and interdisciplinary conceptual understanding.
<b>Subject content</b>	<p>Identify the different types of fossils and how they are formed.</p> <p>Summarize the major events of the geologic time scale.</p> <p>Analyze early experiments that support the concept of biogenesis.</p> <p>Review, analyze, and critique modern theories of the origin of life.</p> <p>Relate hypotheses about the origin of cells to the environmental conditions of early Earth.</p> <p>Summarize Darwin's theory of natural selection.</p> <p>Explain how the structural and physiological adaptations of organisms relate to natural selection.</p> <p>Distinguish among the types of evidence for evolution.</p> <p>Summarize the effects of the different types of natural selection on gene pools.</p> <p>Relate changes in genetic equilibrium to mechanisms of speciation.</p> <p>Explain the role of natural selection in convergent and divergent evolution.</p> <p>Recognize the adaptations of primates.</p> <p>Compare and contrast the diversity of living primates.</p> <p>Distinguish the evolutionary relationships of primates.</p> <p>Compare and contrast the adaptations of australopithecines with those of apes and humans.</p> <p>Identify the evidence of the major anatomical changes in hominids during human evolution.</p>	<p>Describe ecology and the work of ecologists.</p> <p>Identify important aspects of an organism's environment.</p> <p>Trace the flow of energy and nutrients in the living and nonliving worlds.</p> <p>Identify factors that limit the existence of species to certain areas.</p> <p>Describe how and why different communities form.</p> <p>Compare and contrast biomes of Earth.</p> <p>Explain how populations grow.</p> <p>Identify factors that inhibit the growth of populations.</p> <p>Summarize issues in human population growth.</p> <p>Explain the importance of biological diversity.</p> <p>Distinguish environmental changes that may result in the loss of species.</p> <p>Distinguish between the biotic and abiotic factors in the environment.</p> <p>Compare the different levels of biological organization and living relationships important in ecology.</p> <p>Explain the difference between a niche and a habitat.</p> <p>Compare how organisms satisfy their nutritional needs.</p> <p>Trace the path of energy and matter in an ecosystem.</p> <p>Analyze how matter is cycled in the abiotic and biotic parts of the biosphere.</p> <p>Identify some common limiting factors.</p> <p>Explain how limiting factors and ranges of tolerance affect distribution of organisms.</p> <p>Sequence the stages of ecological succession.</p>

		Describe the conditions under which primary and secondary succession take place. Describe the work of conservation biologists.
<b>Objectives</b>	<p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>D</b> - Design and carry out scientific investigations independently.</p> <p><b>F</b> - Carry out scientific investigations using materials and techniques skilfully and safely and showing respect for the living and non-living environment, work effectively as a member of a team, collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.</p>	<p><b>A</b> - Understand the interdependence of science and society. Students are expected to discuss how science is applied and used to solve specific problems in life and society.</p> <p><b>B</b> - Demonstrate understanding when communicating scientific information. Students should use appropriate scientific language, a range of communication modes and the most appropriate communication format.</p> <p><b>C</b> - Show understanding of the main scientific ideas and concepts of science, by applying these to solve problems in familiar and unfamiliar situations. Students should develop critical-thinking skills to analyse and evaluate scientific information.</p> <p><b>D</b> - Design and carry out scientific investigations independently.</p> <p><b>E</b> - Organize and process data. Students should be able to organize and transform data by numerical calculations into diagrammatic form (tables, graphs and charts) and draw and explain appropriate conclusions.</p> <p><b>F</b> - Carry out scientific investigations using materials and techniques skilfully and safely and showing respect for the living and non-living environment, work effectively as a member of a team, collaborating, acknowledging and respecting the views of others as well as ensuring a safe working environment.</p>
<b>Assessments</b>	<p><b>B</b> - Create a concept map summarizing the contributions of other scientists to Darwin's ideas about evolution.</p> <p><b>C</b> - Brainstorm ways Earth might change over the next 1000 years. Select an organism living today and explain how it might evolve to adapt to the changes.</p> <p><b>B</b> - Describe this in writing or make a sketch of specific adaptations in your organism.</p> <p><b>B</b> - Write a brief newspaper explaining the theory of evolution by natural selection for an audience who knows nothing about the subject.</p> <p><b>C, D, F</b> - Construct a evolution game</p>	<p><b>D, E, F</b> - Estimating population size lab</p> <p><b>D</b> - Analyzing population data</p> <p><b>A</b> - Should there be a global effort to limit population</p> <p><b>A</b> - How will population affect resources of the Earth</p> <p><b>A, B</b> - Brochure on invasive species in Barbados</p> <p><b>D, E</b> - Observing organisms</p> <p><b>C</b> -Exam</p>
<b>Links</b>	Math – measurement of skulls	Art – Drawings of energy flow

Kevin Hall November 2009.