

WHS Subject –Group Overview

Subject: Science: Integrated Coordinated Sciences

Year: 4

Unit Title and teaching hours	Key Concept	Related Concept (s)	Global Context	Statement of Inquiry	MYP Subject-group objectives	ATL Skills	Content (topics, knowledge, skills)
Living on the Edge 40 hours	Systems	Consequences	Scientific & Technical Innovation	Building a strong community involves effective communication and planning to limit the consequences of natural disasters.	Criterion A: Using knowledge Criterion D: Reflection on the impacts of science	Communication Self-Management Research	Earth Science: Plate tectonics, volcanoes, earthquakes, tsunamis. Develop a model based on evidence of Earth’s interior to describe the cycling of matter by thermal convection. [Clarification Statement: Emphasis is on both a one-dimensional model of Earth, with radial layers determined by density, and a three-dimensional model, which is controlled by mantle convection and the resulting plate tectonics. Examples of evidence include maps of Earth’s three-dimensional structure obtained from seismic waves, records of the rate of change of Earth’s magnetic field (as constraints on convection in the outer core), and identification of the composition of Earth’s layers from high-pressure laboratory experiments.]
Chemistry in your world 40 hours	Change	Changes in the environment can impact living and non-living systems	Globalization and sustainability	Changes in the environment can impact living and non-living systems.	Criterion D: Reflection on the impacts of science Criterion C: Processing and Evaluating	Social Research Thinking	Chemistry: Periodic Table, Physical and Chemical changes and reactions, bonding. HS-PS-1.1 Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. [Clarification Statement: Examples of properties that could be predicted from patterns could include reactivity of metals, types of bonds formed, numbers of bonds formed, and reactions with oxygen.] [Assessment Boundary: Assessment is limited to main group elements. Assessment does not include quantitative understanding of ionization energy beyond relative trends.]

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Bring the Noise 40 hrs.	Change	Balance Consequences Environment Evidence Interactions	Science and Technical Innovation	Innovation and communication from radio to speakers to the internet depends on waves created by the interaction between electricity and magnetism	Criterion B: Inquiring & Designing Criterion C: Processing & Evaluating	Self- Management Thinking	Basic physics: Scientific method, experimental design HS-PS4-1 Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media. [Clarification Statement: Examples of data could include electromagnetic radiation traveling in a vacuum and glass, sound waves traveling through air and water, and seismic waves traveling through the Earth.] [Assessment Boundary: Assessment is limited to algebraic relationships and describing those relationships qualitatively.]
Relationships Matter 40 hrs.	Relationships	Environment Interactions Models	Identities and Relationships	Understanding relationships and its effect on our earth leads to better and more informed decision making regarding our environment.	Criterion B: Inquiring & Designing Criterion A: Using knowledge	Communication Research	Biology: Ecology & Evolution HS-LS2-2 Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. [Clarification Statement: Examples of mathematical representations include finding the average, determining trends, and using graphical comparisons of multiple sets of data.] [Assessment Boundary: Assessment is limited to provided data.] HS-LS2-6 Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. [Clarification Statement: Examples of changes in ecosystem conditions could include modest biological or physical changes, such as moderate hunting or a seasonal flood; and extreme changes, such as volcanic eruption or sea level rise.]

WHS Subject –Group Overview

Subject: Science: Biology

Year: 4/5

Unit Title and teaching hours	Key Concept	Related Concept (s)	Global Context	Statement of Inquiry	MYP Subject-group objectives	ATL Skills	Content (topics, knowledge, skills)
Life is Cellular	Relationships	Environment Culture Perspective	Identities and relationships	A person's health is influenced by a balance between proper diet and physical activity along with one's cultural identity and relationships within their community.	A. Knowing and Understanding B. Inquiring and Designing Processing and Evaluating	Communication skills Collaboration skills Organization skills Affective skills Reflection skills Information literacy	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions
It's All in your Genes	Perspective	Consequences Evidence	Scientific and Technical Innovation	The Human Genome Project has generated a variety of ethical perspectives from both the scientific community and society at large. Students will focus on a particular scientific innovation and formulate their own ethical perspective by researching and analyzing current evidence.	A: Knowing and understanding D: Reflecting on the impacts of science	Communication skills Information literacy skills	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

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Our Changing World	Change	Environment	Orientation in space and time	Environmental changes put pressure on organisms to survive and can disrupt the delicate balance of ecosystems.	C: Processing and evaluating A: Knowing and understanding	Information literacy Critical thinking skills	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
The Incredible Human Machine	Systems	Function Interaction	Fairness and development	The human body is composed of systems that function and interact to maintain balance. The distribution of disorders and diseases around the world varies relative to the quality of health care systems and education available.	A. Knowing and understanding D. Reflecting on the impacts of science B. Inquiring and Designing	Communication Skills Information Literacy skills Critical thinking skills	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

WHS Subject –Group Overview

Subject: Science: Chemistry

Year: 5

Unit Title and teaching hours	Key Concept	Related Concept (s)	Global Context	Statement of Inquiry	MYP Subject-group objectives	ATL Skills	Content (topics, knowledge, skills)
Atomic Structure and the Periodic Table	Relationships	Interaction Models Patterns	Identities and Relationships	Humans have different ways of organizing the world around them	(C) Processing and evaluating • (B) Inquiry and designing (D) Reflecting on the impacts of science	Collaboration Skills Organization Skills	Knowledge of the structure of the atom. Organize elements according to properties. Trends of periodic table. History of development of atomic theory and periodic table. Electron orbital configuration
Conservation of Matter and Stoichiometry	Change	Balance Models Conditions Transfer	Scientific and Technical Innovation	Interactions can cause things to be reorganized and transformed, but some things may remain constant. This principle helps us produce materials that benefit mankind.	(A) Knowing and understanding (C) Processing and evaluating	Critical Thinking Skills Organization Skills	Students know how to describe chemical reactions by writing balanced equations. • Students know how to determine the molar mass of a molecule from its chemical formula and a table of atomic masses and how to convert the mass of a molecular substance to moles • Students know how to calculate the masses of reactants and products in a chemical reaction from the mass of one of the reactants or products and the relevant atomic masses
Acids, Bases, and Solutions	Systems	Balance Interaction Movement	Globalization And Sustainability	How do chemicals interact with water?	(A) Knowing and Understanding (B) Inquiry and Designing	Critical Thinking Skills	Student will need to know how to determine if a molecule is polar .Students need to know how substances dissolve in water on a molecular level. Students need to understand the concept of pH and how it applies to water .Students need to understand the concept of "concentration" of a solution

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Gases and Their Properties	Systems	Interaction	Globalization and Sustainability	Gases play an important part in the Earth's environment. Management of natural resources by humans greatly affects the environment we live in and how we influence it.	(A) Knowing and understanding (D) Reflecting on the impacts of science	Communication skills Critical thinking skills Creative thinking skills Learning Experiences	The students understand that Pressure is caused by molecules hitting the surface. Volume is the amount of space that contains gas molecules. Temperature is the average kinetic energy of molecules. The amount of matter affects the properties of gas molecules Skills Analyze relationships between gas properties. Predict what would happen if one variable is changed, and how it will affect the other gas variables. Create a hot air balloon that demonstrates their understanding of how energy effects gas molecules and their properties.