

Science – MYP Year 4



* All units taught in MYP Years 1-5 are continuously being developed and improved to best meet the needs of the students at LIS. Therefore, the following Subject Overview is only a reflection of current plans for the course. Some changes to this document may occur as a result of planning done throughout the academic year.

	Unit	Concepts	Global Context	Statement of Inquiry	Inquiry Questions	MYP Objectives ATL Skills	Content
Unit 1	Exploring Diversity: Microorganisms, Invertebrates, and Vertebrates	Systems Patterns	Identities and relationships Competition and cooperation	All life on Earth is related, exhibiting patterns of shared characteristics and functions across a wide range of organisms.	<p>Factual: What are features of major taxonomic groups?</p> <p>Conceptual: How have our views about life and its origins changed over time?</p> <p>Debatable: Is there life beyond Earth?</p>	<p>Criterion A: i, ii, iii</p> <p>Criterion D: i, ii, iii, iv</p> <p>ATL Skills Organization Critical-thinking Creative-thinking</p>	Microorganisms: Small, Living Unicellular, Multicellular Prokaryotes, Eukaryotes Diseases Uses: Food, Industry, Health, Environment Virus: Genetic Material, Capsid Microbiology: Study Invertebrates: Non-Vertebrates Diverse Phyla Vertebrates: Small Group Common Characteristics Vertebrate Groups: Characteristics, Life Processes
Unit 2	Cells and its processes	Systems Function	Scientific and technical innovation The biological revolution	Biological revolution transformed our understanding of the function of cells in living systems, and we use this understanding to investigate the interactions and interdependencies of cells within complex	<p>Factual: What occurs in the process of cellular respiration?</p> <p>Conceptual: Why do some organisms need to feed themselves</p>	<p>Criterion D: i, ii, iii, iv</p> <p>ATL Skills Organization Affective Communication</p>	Cells: Basic Units Microscope: Observation Many-Celled, Single-Celled Eukaryotic, Prokaryotic Bacteria: Prokaryotic Many-Celled: Eukaryotic, Tissues Single-Celled Eukaryotes

				biological systems.	whereas others do not? Debatable: Should chemical reactions be manipulated in order to meet our food and fuel needs?		Life Processes: Cell Level Feeding: Energy, Matter Reproduction: Mitosis, Stem Cells Human Cells: Plasma Membrane, Cytoplasm, Nucleus Organelles: Nucleus, Mitochondria, Vacuoles, Lysosomes, Cilia, Flagella, Endoplasmic Reticulum, Golgi Apparatus Macromolecular Complexes: Ribosomes, Proteasomes, Cytoskeleton, Centrioles Cell Differentiation: Traits, Activity Photosynthesis: Process, Working Cell Respiration: Process, Working
Unit 3	Chemical Reactions and Bonding	Relationships Interaction	Scientific and technical innovation Modernization, industrialization and engineering	Chemical reactions and interactions impact the relationship between industrialization and engineering, and understanding of this can be used to improve the efficiency and sustainability of industrial processes.	Factual: What are the different types of chemical bonds, and how do they form? Conceptual: How do chemical reactions involve the rearrangement of atoms and the formation of new	Criterion A: i, ii, iii Criterion B: i, ii, iii, iv Criterion C: i, ii, iii, iv, v ATL Skills Organization Communication Critical-thinking Information literacy	Chemical Changes: Diverse Distinguish, Classify Conservation of Matter Energy Exchange Chemical Equations: Reading, Writing, Using Experimental Design: Reaction Control Chemical Reactions: Life Fuel Industrial Applications

					<p>substances?</p> <p>Debatable: What ethical considerations should be taken into account when studying and applying chemical reactions and bonding in various industries and technologies?</p>		
Unit 4	Solutions, Acids and Bases	Change Transformation	Globalization and sustainability sustainability of different acid-base chemical processes in industry	Learning to control chemical changes allows us to transform and use matter in new ways, having in mind the sustainability of different acid-base chemical processes used in industry.	<p>Factual: What are the properties of solutions, acids, and bases, and how do they differ from each other?</p> <p>Conceptual: What are the underlying principles behind acid-base reactions, and how do they contribute to chemical equilibrium?</p> <p>Debatable: How can scientific research on solutions, acids, and bases</p>	<p>Criterion B: i, ii, iii, iv</p> <p>Criterion C: i, ii, iii, iv, v</p> <p>Criterion D: i, ii, iii, iv</p> <p>ATL Skills Organization Information literacy Media literacy</p>	<p>Solutions, Acids, Bases Solution Properties Solubility Factors Homogeneous, Heterogeneous Solution Concentration Acids, Bases Introduction Acid Characteristics: pH, Conductivity, Reactivity Base Characteristics: pH, Conductivity, Reactivity Common Acids, Bases Acid-Base Reactions, Neutralization Environmental, Industrial Applications Ethical Considerations</p>

					contribute to the development of sustainable technologies and practices in agriculture, energy production, and waste management?		
Unit 5	Kinematics	Change Models	Globalization and sustainability interconnection	Through controlling energy sustainable consumption, we can make changes happen that have an impact on the way people live now and in the future.	<p>Factual: What is the formula for calculating velocity in kinematics?</p> <p>Conceptual: How do Newton's laws of motion provide a conceptual framework for understanding kinematics?</p> <p>Debatable: Should the use of artificial intelligence and machine learning algorithms be integrated into kinematic modeling for enhanced predictive capabilities, or does this pose ethical</p>	<p>Criterion A: i, ii, iii</p> <p>ATL Skills Collaboration Organization Information literacy</p>	<p>Motion Analysis, Graphing Position Determination: Coordinates Position Prediction: Object Motion Uniform Acceleration Principle Varied Acceleration Non-linear Motion Description Speedometer Design, Assembly</p>

					concerns regarding data privacy and algorithmic bias?		
Unit 6	Forces and motion	Relationships Movement	Fairness and development Development	Exploring the relationship between forces and motion through the lens of movement and development elucidates the fundamental principles governing interactions within systems, driving technological advancements and societal progress on a global scale.	<p>Factual: What are the fundamental forces in nature, and how do they influence the motion of objects?</p> <p>Conceptual: How does the interaction between forces and motion vary in different reference frames, and what are the implications for our understanding of relative motion?</p> <p>Debatable: Should society prioritize investments in renewable energy technologies that harness forces and motion over traditional fossil fuel-based energy sources, considering environmental</p>	<p>Criterion A: i, ii, iii</p> <p>ATL Skills Communication Organization Information literacy</p>	<p>Motion, Force Relationship Laws Governing Forces, Motion Force Combination: Single Effect Starting vs. Keeping Motion Spring Stretch Difficulty Gravitational Force: Earth, Celestial Bodies Force Measurement Device Construction</p>

					sustainability and resource conservation?		
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