

Science – MYP Year 2



* 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.

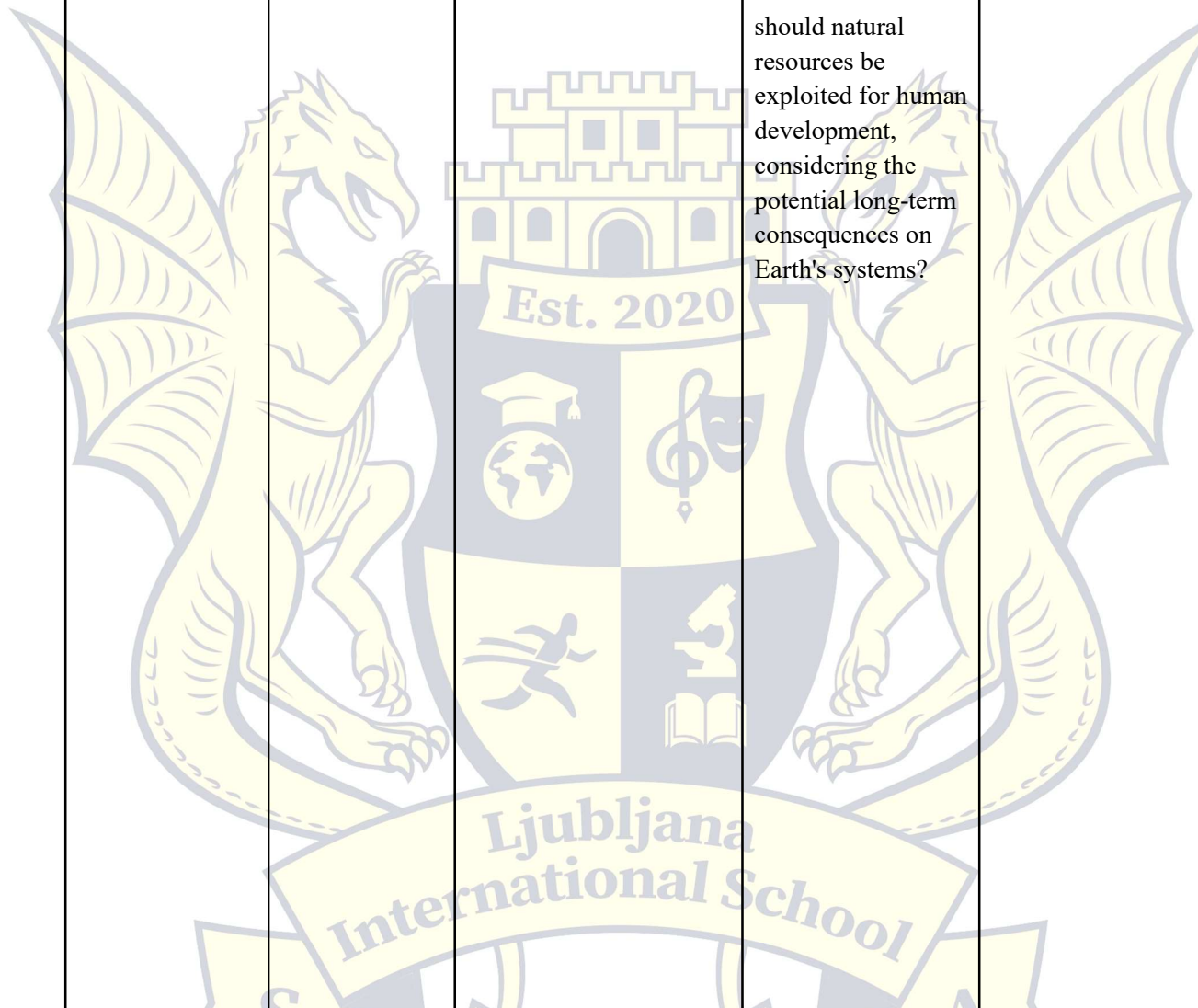
	Unit	Concepts	Global Context	Statement of Inquiry	Inquiry Questions	MYP Objectives ATL Skills	Content
Unit 1	Objects in Motion	Systems Movement Models	Orientation in space and time Scale, duration, frequency and variability	Analyzing the movement of objects through the lens of systems, models, and global exploration frequency reveals intricate connections between the dynamics of motion and our understanding of the world.	<p>Factual: What is motion?</p> <p>Conceptual: How does the study of objects in motion contribute to our broader understanding of the fundamental principles governing the universe?</p> <p>Debatable: Is the focus on analyzing motion through models and simulations limiting our ability to truly understand the intricacies of the physical world?</p>	<p>Criterion A: i, ii, iii Criterion D: i, ii, iii, iv</p> <p>ATL Skills Critical-thinking Creative-thinking Information literacy Media literacy</p>	<p>The meaning of the expressions position, trajectory, distance, and displacement.</p> <p>The importance and use of systems of reference.</p> <p>To describe the motion of an object in geometrical and temporal terms.</p> <p>To read and plot simple distance–time graphs.</p> <p>That speed is the ratio between the distance and the time required to cover that distance.</p> <p>To carry out simple calculations involving distances, times, and speeds.</p> <p>That acceleration is the change in speed per unit time.</p>

							That forces are always interactions between two objects.
Unit 2	Atomic Structure of Matter	Change Models Patterns	Scientific and technical innovation consequences and responsibility	As our society changes and progresses due to innovations in materials science using patterns and models, we have a responsibility to consider ethical consequences.	<p>Factual: What is matter?</p> <p>Conceptual: Why do elements bond?</p> <p>Debatable: How can we ensure that metals and e-waste are recycled appropriately?</p>	<p>Criterion C: i, ii, iii, iv, v</p> <p>Criterion D: i, ii, iii, iv</p> <p>ATL Skills Information literacy Critical-thinking Transfer Creative-thinking</p>	<p>There are a wide variety of physical properties characteristic of objects and the materials that make them up.</p> <p>Changes in the properties of an object that do not change the nature of the substances that make up the object are called physical changes.</p> <p>Substances can undergo chemical changes and transform into other pure substances. Substances have chemical properties that determine the chemical changes they can undergo.</p> <p>How to distinguish between chemical changes and physical changes. There are two types of pure substances: elements and compounds.</p> <p>Matter consists, ultimately, of</p>

							<p>elementary particles called atoms.</p> <p>There is a hundred different types of atoms, as many as elements.</p> <p>The role of atoms in chemical changes.</p>
<p>Unit 3</p>	<p>Reproduction and Inheritance</p>	<p>Relationships Patterns Evidence</p>	<p>Identities and relationships Identity formation</p>	<p>Patterns in the genome within our cells help to determine our identity formation, but we must be careful to consider all forms of evidence through transitions.</p>	<p>Factual: How do organisms reproduce sexually and asexually, and what are the advantages and disadvantages of each method?</p> <p>Conceptual: How do environmental factors influence gene expression and phenotype variation in organisms?</p> <p>Debatable: Is it ethical to use selective breeding in agriculture and animal husbandry to enhance desired traits, even if it may lead to loss of genetic diversity?</p>	<p>Criterion A: i, ii, iii</p> <p>ATL Skills Organization Reflection Media literacy</p>	<p>There are two different forms of reproduction in living organisms: sexual and asexual.</p> <p>Through sexual reproduction, two organisms of the same species cooperate to create new living organisms similar to them.</p> <p>Through asexual reproduction, a single organism creates new living organisms identical to itself.</p> <p>All living organisms, except bacteria, reproduce sexually.</p> <p>Many living organisms, like bacteria, reproduce asexually.</p> <p>Some organisms can reproduce both sexually and asexually.</p>

							<p>Sexual reproduction is performed through fertilization, the fusion of a male sex cell and a female sex cell in a zygote.</p> <p>In many-celled organisms, the zygote grows and gives rise to millions of different cells in a process called embryonic development.</p> <p>After birth, a living organisms grows and develops until it reaches sexual maturity and becomes able to reproduce, thus completing its biological cycle.</p>
Unit 4	Forces	Relationships Energy Form	Personal and cultural expression Creation	Through exploring the relationships between form and energy in various physical phenomena, students investigate how forces contribute to the creation of structures and systems in the natural world.	<p>Factual: How do different forms of energy interact with each other to produce forces in the natural world?</p> <p>Conceptual: How do forces influence the creation and maintenance of</p>	<p>Criterion B: i-iv Criterion C: i-v</p> <p>ATL Skills Information literacy Organization Critical-thinking</p>	<p>Forces are always interactions between two objects.</p> <p>Identify the main forces in our surrounding environment.</p> <p>Represent forces.</p> <p>Effects that forces cause.</p> <p>Forces acting on an object are combined to produce a single effect.</p>

					<p>structures and systems in our environment?</p> <p>Debatable: What are the environmental impacts of human activities that involve the application of forces, and how can we mitigate them?</p>		<p>Gravity and how it affects us.</p> <p>Relationship between forces and motion.</p>
<p>Unit 5</p>	<p>Earth's Systems</p>	<p>Systems Models Patterns</p>	<p>Globalization and sustainability</p> <p>Human impact on the environment</p>	<p>Modelling the patterns of Earth's systems and cycles can help us prepare for or predict natural disasters that are sometimes the consequence of human impact on the environment.</p>	<p>Factual: What role do plate tectonics play in shaping the Earth's surface and influencing natural phenomena like earthquakes and volcanic eruptions?</p> <p>Conceptual: What are the connections between Earth's systems, such as the atmosphere, hydrosphere, biosphere, and geosphere, and how do they influence each other?</p>	<p>Criterion C: i, ii, iii, iv, v</p> <p>ATL Skills Collaboration Communication Organization</p>	<p>How does the energy from the inner Earth impact the surface of the planet?</p> <p>How can natural hazards such as volcanoes and earthquakes be predicted?</p> <p>How geoscience processes pushed by the Earth's internal energy have changed the planet's surface at varying time and spatial scales.</p> <p>Use the same type of data that scientists use in order to study the structure of the inner Earth and its surface layer, the lithosphere. Develop a model of the structure and dynamics</p>

					<p>Debatable: To what extent should natural resources be exploited for human development, considering the potential long-term consequences on Earth's systems?</p>		<p>of the whole geosphere that will allow you to construct explanations for the occurrence of earthquakes, volcanoes, and other geological phenomena that continually change the Earth's surface. This model will reflect that our planet is a complex and dynamic system.</p> <p>Analyze and interpret real data on natural hazards, such as volcanoes and earthquakes, to understand how scientists can forecast future catastrophic events and inform the development of technologies to mitigate the effects of catastrophic events.</p> <p>Use evidence to construct a scientific explanation for how the lithosphere is broken into several pieces (the tectonic plates) that move slowly but constantly.</p>
<p>Unit 6</p>	<p>Responses to the Environment</p>	<p>Change Consequences</p>	<p>Scientific and technical innovation</p>	<p>Organisms have changed and evolved uniquely adapted senses as a consequence of the</p>	<p>Factual: What are the different types of environmental</p>	<p>Criterion B: i, ii, iii, iv Criterion C: i, ii,</p>	<p>Both animals and plants are able to interact with their environment.</p>

			<p>Sensory design</p>	<p>environments they live in, but humans can extend our sensory abilities using scientific and technical innovations for sensory design.</p>	<p>stimuli that organisms respond to?</p> <p>Conceptual: How do organisms adapt to their environment through physiological and behavioral responses?</p> <p>Debatable: What are the ethical implications of human interventions to manipulate organismal responses to the environment, such as through genetic modification or behavioral conditioning?</p>	<p>iii, iv, v</p> <p>Collaboration skills Affective skills Organization skills</p>	<p>Interacting with the environment involves detecting stimuli from the environment and responding to them appropriately.</p> <p>Living organisms have specialized receptors for detecting stimuli.</p> <p>Receptors in animals are sense organs.</p> <p>Interaction with the environment is controlled by the nervous and endocrine systems in animals, and by plant hormones in plants.</p> <p>Identify different responses by animals, plants, and unicellular organisms.</p> <p>Communication is an essential process in the interaction among living organisms.</p>
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