

## Subject Group Overview

## Sciences (MYP 1)

Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 1 Sciences 2020-21 Unit 1: Zoom into life	Systems	Environment, Evidence	Orientation in space and time  Frequency and variability, Evolution	Systems provide environmental evidence and help us understand and recognize different ways of organizing the complexity of life on Earth. The analysis of common features and differences among living organisms allows us to understand that we belong to one big unique world.	<b>A: Knowing and understanding</b> i. outline scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations  <b>B: Inquiring and designing</b> i. outline an appropriate problem or research question to be tested by a scientific investigation ii. outline a testable prediction using scientific reasoning iii. outline how to manipulate the variables, and outline how data will be collected  <b>C: Processing and evaluating</b> i. present collected and transformed data ii. interpret data and outline results using scientific reasoning  <b>D: Reflecting on the impacts of science</b> i. summarize the ways in which science is applied and used to address a specific problem or issue	Description  <b>Learning Experiences:</b>  <b>Research:</b> Student will be given feedback on how to collect, record and verify data.  <b>Research</b> <ul style="list-style-type: none"> <li>• VI. Information literacy skills</li> <li>• Finding, interpreting, judging and creating information</li> <li>• Collect, record and verify data</li> </ul>	Living and non-living things. Characteristics of living organisms.  Investigating variation: organizing data in frequency diagrams, bar charts, mean, median, mode.  Concept of species. Biological classification: the five kingdoms. The animal kingdom: basic classification of vertebrates and invertebrates. The plant kingdom: how to recognize different groups of plants. Microorganisms and their roles.  Environmental characteristics that influence life  Use of the microscope. Plant cells. Animal cells.  Scientific Method and Variables
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			Explorations			Learning	
MYP 1 Sciences 2020-21 Unit 2: Keep everything together: living organisms in their environment	Relationships	Environment, Interaction	Globalization and sustainability  Human impact on the environment	Relationships between organisms and the environment leads to interaction with their surroundings which allows them to adapt in order to survive in unfamiliar habitats.	<b>A: Knowing and understanding</b> i. outline scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations iii. interpret information to make scientifically supported judgments <b>D: Reflecting on the impacts of science</b> i. summarize the ways in which science is applied and used to address a specific problem or issue iii. apply scientific language effectively iv. document the work of others and sources of information used	Description  <b>Learning Experiences:</b>  <b>Thinking:</b> Reflection on adaptation  <b>Thinking</b> • VIII. Critical thinking skills • Analysing and evaluating issues and ideas • Gather and organize relevant information to formulate an argument	Energy and living organisms in their environment.  Living organisms in relationship: adaptation and behaviour.  Migration as a feasible solution to survival.  Food chains.  Biodiversity.  Pollution and alternative energy resources.
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 1 Sciences 2020-21 Unit 3: Chemistry: what are different materials made of?	Change	Transformation, Form	Scientific and technical innovation  Processes and solutions	Change in form occurs through transformations which can be analyzed in products using technological innovation.	<b>B: Inquiring and designing</b> i. outline an appropriate problem or research question to be tested by a scientific investigation ii. outline a testable prediction using scientific reasoning iii. outline how to manipulate the variables, and outline how data will be collected iv. design scientific	Description  <b>Learning Experiences:</b>  <b>Thinking:</b> Debates in class, lab activities and data evaluation to improve in data interpretation  <b>Thinking</b> • VIII. Critical thinking skills • Analysing and	Particles theory and changes of state.  Different properties of materials: metals and non-metals.  Water as a liquid, solid and gas.  The importance of water for plants  The importance of water

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					investigations <b>C: Processing and evaluating</b> i. present collected and transformed data ii. interpret data and outline results using scientific reasoning iii. discuss the validity of a prediction based on the outcome of the scientific investigation iv. discuss the validity of the method v. describe improvements or extensions to the method	evaluating issues and ideas • Interpret data	for animals  The effects of water on Earth (weathering/erosion)  <b>Skills</b>  Design a scientific investigation in order to answer a research question.  Organize data in tables, process them and show the results in an appropriate format.
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 1 Sciences 2020-21 Unit 4: The history of Earth: rocks cycle and evolution of life.	Change	Patterns, Transformation	Scientific and technical innovation  Systems, Models	Changes in the patterns of the Earth's crust has transformed our continents, affecting our lives with dramatic seismic events requiring renewed strategies using technological innovations to reduce and prevent damage.	<b>A: Knowing and understanding</b> i. outline scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations iii. interpret information to make scientifically supported judgments <b>D: Reflecting on the impacts of science</b> i. summarize the ways in which science is applied and used to address a specific problem or issue iii. apply scientific language effectively iv. document the work	Description  <b>Learning Experiences:</b> <b>Thinking:</b> Reflection on implications of Earth's changes  <b>Thinking</b> • VIII. Critical thinking skills • Analysing and evaluating issues and ideas • Draw reasonable conclusions and generalizations	The history of Earth: rocks cycle and evolution of life.  Fossils and geological timescale.  From mineral to rock, from rock to soil.

of others and sources of information used

## Sciences (MYP 2)

Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 2 Sciences 2020-21 Unit 1: Chemistry: from elements to molecules	Change	Transformation, Form	Scientific and technical innovation  Models, Risk, Principles and discoveries	Matter analyzed from its microscopic structure and how it can change through effect of natural forces leads us to understand the nature of its many different forms and how it can be transformed leading to new scientific technical innovations.	<b>A: Knowing and understanding</b> i. describe scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse information to make scientifically supported judgments <b>B: Inquiring and designing</b> i. describe a problem or question to be tested by a scientific investigation ii. outline a testable hypothesis and explain it using scientific reasoning iii. describe how to manipulate the variables, and describe how data will be collected iv. design scientific investigations <b>C: Processing and evaluating</b> i. present collected and transformed data ii. interpret data and describe results using scientific reasoning iii. discuss the validity of a hypothesis based on the outcome of the scientific investigation	<b>Description</b>  <b>Learning Experiences:</b>  <b>Communication:</b> At beginning of the unit, the ATL skill in object is introduced to the class.  Students will work on two tasks: the first is a presentation, supported by posters on "key concepts" in Science and "Ib Lerner Profile" characteristics that better represent a scientist.  At the end the task, there will be a moment of reflection and a personal feed back on level of achievement, more over an personal ATL reflection will be produced by each student.  In a second task students will prepare a presentation on an element and its relevance in daily life. Students will have to select most effective technique to	Review of particles theory and study of its influence upon states of matter and diffusion.  Brownian motion.  Organisation of elements: the periodic table.  Atoms and molecules.  Elements and compounds.  Mixtures and separating mixtures.  Solutions and solubility.  Chemical and physical changes.

					iv. discuss the validity of the method v. describe improvements or extensions to the method <b>D: Reflecting on the impacts of science</b> i. describe the ways in which science is applied and used to address a specific problem or issue ii. discuss and analyse the various implications of using science and its application in solving a specific problem or issue iii. apply scientific language effectively iv. document the work of others and sources of information used	communicate their information to classmates. At the end of presentation a personal feed back on level of achievement and improvements will be given and a final personal ATL reflection will be produced.  <b>Communication</b> <ul style="list-style-type: none"><li>I. Communication skills</li><li>Exchanging thoughts, messages and information effectively through interaction</li><li>Use a variety of speaking techniques to communicate with a variety of audiences</li></ul>	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 3 Sciences 2020-21 Unit 1: Motion	Change	Movement, Patterns	Scientific and technical innovation  Mathematical puzzles, Principles and discoveries	Mathematical models can be applied to identify the pattern of a moving object and deduce motion features such as speed and acceleration, in order to improve scientific knowledge and technological development.	<b>A: Knowing and understanding</b> i. describe scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse information to make scientifically supported judgments <b>B: Inquiring and designing</b> i. describe a problem or question to be tested by a scientific investigation ii. outline a testable hypothesis and explain	Description  <b>Research</b> <ul style="list-style-type: none"><li>VI. Information literacy skills</li><li>Finding, interpreting, judging and creating information</li><li>Collect, record and verify data</li><li>Present information in a variety of formats and platforms</li><li>Process data and report results</li></ul> <b>Thinking</b> <ul style="list-style-type: none"><li>VIII. Critical thinking skills</li><li>Analysing and</li></ul>	Reference points.  Distance, displacement. Speed, average speed, and velocity.  Acceleration.  Distance time and speed time graphs.  Calculation of distance from a speed-time graph.

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					it using scientific reasoning iii. describe how to manipulate the variables, and describe how data will be collected iv. design scientific investigations <b>C: Processing and evaluating</b> i. present collected and transformed data ii. interpret data and describe results using scientific reasoning	evaluating issues and ideas • Interpret data • Test generalizations and conclusions • Use models and simulations to explore complex systems and issues	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 2 Sciences-PHE 2020/21 IDU : How continuous training improves the heart's health?  <b>Interdisciplinary Unit</b> Physical and health education	Systems	<b>Sciences - Sciences</b> Consequences  <b>Physical and health education - Physical and health education</b> Balance	Identities and relationships  Physical, psychological and social development, Transitions, Health and well-being, Lifestyle choices  Physical and health education	The study of human body systems, their functions and their interactions leads to a better awareness of the consequences that smoking could cause directly and indirectly to the human body and society, contributing to the formation of balanced and respectful young adults.	<b>Sciences - Sciences</b> <b>A: Knowing and understanding</b> i. describe scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse information to make scientifically supported judgments <b>C: Processing and evaluating</b> i. present collected and transformed data ii. interpret data and describe results using scientific reasoning iii. discuss the validity of a hypothesis based on the outcome of the scientific investigation	Description  <b>Learning Experiences:</b> Develop experimental activities with the help of the teacher and alone.  <b>Research:</b> Students will research and analyze information from a variety of media. They will build a document using the information they found and the knowledge they have acquired during the unit.  <b>Self-management</b> • III. Organization skills • Managing time and tasks effectively • Create plans to	Human transportation system, heart and blood vessels.  Blood, function, blood cells.  Gas exchanges.  Keeping fit: good diet, regular exercise, no cigarettes.  Human respiratory system, breathing in and out.  Respiration in plants and cells: aerobic respiration.  Yeast: respiration without oxygen.

iv. discuss the validity of the method  
v. describe improvements or extensions to the method

### **D: Reflecting on the impacts of science**

iii. apply scientific language effectively  
iv. document the work of others and sources of information used

prepare for summative assessments (examinations and performances)

- Set goals that are challenging and realistic
- Use appropriate strategies for organizing complex information
- Select and use technology effectively and productively

### **Research**

- VI. Information literacy skills
- Finding, interpreting, judging and creating information
- Collect, record and verify data
- Access information to be informed and inform others
- Make connections between various sources of information
- Collect and analyse data to identify solutions and make informed decisions
- Process data and report results
- Understand and implement intellectual property rights
- Create references and citations, use footnotes/endnotes and construct

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						abibliography according to recognised conventions <ul style="list-style-type: none"> <li>• VII. Media literacy skills</li> <li>• Interacting with media to use and create ideas and information</li> <li>• Locate, organize, analyse, evaluate, synthesise and ethically use information from a variety of sources and media (including digital social media and online networks)</li> <li>• Communicate information and ideas effectively to multiple audiences using a variety of media and formats</li> </ul>	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 2 Sciences 2020-21 Unit 3: Keep life going: how organisms reproduce, strategies and adaptations.	Relationships	Function, Interaction	Identities and relationships  Physical, psychological and social development, Health and well-being, Lifestyle choices	The main function of the reproductive system is to ensure the survival of a species through interaction with the surrounding environment, and to create the cells carrying the genetic information to build the identity of each individual.	<b>A: Knowing and understanding</b> <ul style="list-style-type: none"> <li>i. describe scientific knowledge</li> <li>ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations</li> <li>iii. analyse information to make scientifically supported judgments</li> </ul>	<b>Self-management</b> <ul style="list-style-type: none"> <li>• III. Organization skills</li> <li>• Managing time and tasks effectively</li> <li>• Use appropriate strategies for organizing complex information</li> </ul>	Reproduction in Plants  Reproduction in humans: reproductive system in humans, fertilization, development of a new organism.



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## Sciences (MYP 3)

Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 3 Sciences 2020-21 Unit 1: Motion	Change	Movement, Patterns	Scientific and technical innovation  Mathematical puzzles, Principles and discoveries	Mathematical models can be applied to identify the pattern of a moving object and deduce motion features such as speed and acceleration, in order to improve scientific knowledge and technological development.	<b>A: Knowing and understanding</b> i. describe scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse information to make scientifically supported judgments <b>B: Inquiring and designing</b> i. describe a problem or question to be tested by a scientific investigation ii. outline a testable hypothesis and explain it using scientific reasoning iii. describe how to manipulate the variables, and describe how data will be collected iv. design scientific investigations <b>C: Processing and evaluating</b> i. present collected and transformed data ii. interpret data and describe results using scientific reasoning	Description  <b>Research</b> <ul style="list-style-type: none"> <li>• VI. Information literacy skills</li> <li>• Finding, interpreting, judging and creating information</li> <li>• Collect, record and verify data</li> <li>• Present information in a variety of formats and platforms</li> <li>• Process data and report results</li> </ul> <b>Thinking</b> <ul style="list-style-type: none"> <li>• VIII. Critical thinking skills</li> <li>• Analysing and evaluating issues and ideas</li> <li>• Interpret data</li> <li>• Test generalizations and conclusions</li> <li>• Use models and simulations to explore complex systems and issues</li> </ul>	Reference points.  Distance, displacement. Speed, average speed, and velocity.  Acceleration.  Distance time and speed time graphs.  Calculation of distance from a speed-time graph.
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 3 Sciences 2020-21 Unit 2: Bodies and forces	Change	Interaction, Movement	Scientific and technical innovation	Scientific and technical innovation based on the study of bodies and on	<b>A: Knowing and understanding</b> i. describe scientific knowledge	Description	<b>Knowledge:</b>  Forces as different

Modernization,  
Industrialization and  
engineering

the changes in state  
and shape arising from  
their interactions,  
allowed human beings  
to solve practical  
problems supporting  
the processes of  
modernization and  
industrialization.

ii. apply scientific  
knowledge and  
understanding to solve  
problems set in familiar  
and unfamiliar situations  
iii. analyse information  
to make scientifically  
supported judgments

**B: Inquiring and  
designing**

i. describe a problem or  
question to be tested by  
a scientific investigation  
ii. outline a testable  
hypothesis and explain  
it using scientific  
reasoning  
iii. describe how to  
manipulate the  
variables, and describe  
how data will be  
collected  
iv. design scientific  
investigations

**C: Processing and  
evaluating**

i. present collected and  
transformed data  
ii. interpret data and  
describe results using  
scientific reasoning  
iii. discuss the validity of  
a hypothesis based on  
the outcome of the  
scientific investigation  
iv. discuss the validity of  
the method  
v. describe  
improvements or  
extensions to the  
method

**D: Reflecting on the  
impacts of science**

iii. apply scientific  
language effectively

**Learning  
Experiences:**

**Social:**

Students will work in  
groups during lab  
activities.

**Research:**

Students will write an  
essay with a reflection  
on the application of  
Archimedes' principle in  
lives of human beings  
by using online network.  
Students will collect,  
record and analyze data  
during lab experiences.

**Thinking**

- IX. Creative thinking  
skills
- Generating novel  
ideas and  
considering new  
perspectives
- Make guesses, ask  
“what if” questions  
and generate  
testable hypotheses
- X. Transfer skills
- Utilizing skills and  
knowledge in  
multiple contexts
- Transfer current  
knowledge to  
learning of new  
technologies

kinds of interactions  
among bodies, the  
differences between  
mass and weight, mass  
density, pressure,

Archimedes principle.

Meaning and uses of  
levers.

**Skills:**

Collecting and analyzing  
raw data obtained  
during an experiment in  
the lab, apply  
theoretical concepts to  
real-life situations in  
order to explain  
phenomenons and  
provide new  
technological solutions.

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Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 3 Sciences 2020-21 Unit 3: Electricity and energy	Relationships	Interaction, Patterns	<p>Scientific and technical innovation</p> <p>Systems, Models, Methods, Modernization, Industrialization and engineering</p>	Relationships between interacting bodies can be represented by non contact forces which can be detected through hidden patterns letting electromagnetism be one of the most powerful discovery and boost of new technologies development from the nineteenth century to now.	<p>iv. document the work of others and sources of information used</p> <p><b>A: Knowing and understanding</b></p> <p>i. describe scientific knowledge</p> <p>ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations</p> <p>iii. analyse information to make scientifically supported judgments</p> <p><b>C: Processing and evaluating</b></p> <p>i. present collected and transformed data</p> <p>ii. interpret data and describe results using scientific reasoning</p> <p>iii. discuss the validity of a hypothesis based on the outcome of the scientific investigation</p> <p>iv. discuss the validity of the method</p> <p>v. describe improvements or extensions to the method</p>	<p><b>Research</b></p> <ul style="list-style-type: none"> <li>VI. Information literacy skills</li> <li>Finding, interpreting, judging and creating information</li> <li>Collect, record and verify data</li> </ul>	<p>Conductors and insulators.</p> <p>Electrons and current flow.</p> <p>Magnitude, resistance and voltage.</p> <p>Ohm's law.</p> <p>Electric circuits.</p> <p>Definition of work, power and energy.</p> <p>Different forms in which energy is stored.</p>
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 3 Sciences 2020-21 Unit 4: Control and coordination	Systems	Function, Interaction	<p>Identities and relationships</p> <p>Physical, psychological and social development, Transitions, Health and well-being, Lifestyle</p>	Every living organism is a system with complex functions which are controlled in order to let it live, interacting with the surrounding environment, in a	<p><b>A: Knowing and understanding</b></p> <p>i. describe scientific knowledge</p> <p>ii. apply scientific knowledge and understanding to solve problems set in familiar</p>	<p>Description</p> <p><b>Communication:</b></p> <p>Students will participate in a class discussion about how different drugs can affect the</p>	<p>Description and functioning of neurons.</p> <p>Description and functioning of the different parts of the nervous system and the</p>

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			choices	progressive definition of its identity and relationship with other organisms.	and unfamiliar situations iii. analyse information to make scientifically supported judgments <b>B: Inquiring and designing</b> i. describe a problem or question to be tested by a scientific investigation ii. outline a testable hypothesis and explain it using scientific reasoning iii. describe how to manipulate the variables, and describe how data will be collected iv. design scientific investigations <b>D: Reflecting on the impacts of science</b> i. describe the ways in which science is applied and used to address a specific problem or issue ii. discuss and analyse the various implications of using science and its application in solving a specific problem or issue iii. apply scientific language effectively iv. document the work of others and sources of information used	nervous system. <b>Communication</b> • I. Communication skills • Reading, writing and using language to gather and communicate information • Use and interpret a range of discipline-specific terms and symbols • Organize and depict information logically <b>Research</b> • VI. Information literacy skills • Finding, interpreting, judging and creating information • Make connections between various sources of information	5 senses. Description and functioning of the endocrine system (main glands).
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 3 Sciences 2020-21 Unit 5: Heredity and tectonics: keys to understand the	Change	Consequences, Transformation	Orientation in space and time	Observation of the ongoing processes that transform the Earth and all life on it is the key to	<b>A: Knowing and understanding</b> i. describe scientific knowledge ii. apply scientific	Description	Genotype and phenotype.  Mendel’s laws.

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evolution of life on Earth.			understanding the events that led to the Earth as we know it today.	knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse information to make scientifically supported judgments <b>D: Reflecting on the impacts of science</b> iii. apply scientific language effectively iv. document the work of others and sources of information used	<b>Learning Experiences:</b> <b>Communication:</b> Students will participate in a debate about genetics control and its impact in our everyday life <b>Social:</b> <b>Self-management:</b>  <b>Communication</b> <ul style="list-style-type: none"><li>• I. Communication skills</li><li>• Reading, writing and using language to gather and communicate information</li><li>• Use and interpret a range of discipline-specific terms and symbols</li></ul>	Punnett's square. Tectonics, volcanoes and earthquakes. The evolution of life on Earth. The evolution of human kind.
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## Sciences (MYP 4)

Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP4: Physics: Unit 1: Rules and Principles in Physics	Systems	Evidence, Consequences	Scientific and technical innovation  Models, Methods, Processes and solutions	The search for experimental evidence of causes and consequences of physical processes requires scientists to establish theoretical models and develop methods which can be adapted to different systems	<b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported	Description  <b>Learning Experiences:</b> <b>Research:</b> In order for students to <i>present collected and transformed data, interpret data and explain results using</i>	The scientific method The International System: fundamental VS derived quantities and their units Scientific notation, order of magnitude, metric multipliers and significant figures Measurements and uncertainties Propagation of errors

judgments

## **C: Processing and evaluating**

- i. present collected and transformed data
- ii. interpret data and explain results using scientific reasoning
- iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation
- iv. evaluate the validity of the method
- v. explain improvements or extensions to the method

*scientific reasoning and evaluate the validity of a hypothesis based on the outcome of scientific investigation they must collect, record and verify data, process data and report results and understand and use technology systems.*

### **Thinking:**

In order for students to *explain improvements or extensions to the method* they must *create novel solutions to authentic problems* and *apply existing knowledge to generate new ideas, products or processes.*

### **Research**

- VI. Information literacy skills
- Finding, interpreting, judging and creating information
- Collect, record and verify data
- Process data and report results

### **Thinking**

- IX. Creative thinking skills
- Generating novel ideas and considering new perspectives
- Create novel solutions to authentic problems
- Apply existing

Data analysis and curve fitting

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Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP4: biology and chemistry: Unit 1 2020-21: Principles and rules in science	Systems	Environment, Models	Identities and relationships  Moral reasoning and ethical judgment, Consciousness and mind	Science has developed systems of rules and protocols to study the environment, living organisms and their relationship with the abiotic components and has created models to describe principles and laws of nature .	<b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported judgments	knowledge to generate new ideas, products or processes  Description  <b>Learning Experiences:</b>  <b>Communication:</b> Students at the beginning of the unit, have to write the procedure for preparing a solution and evaluate accuracy and precision. Feedback is given to every student. During lab activities the importance of the correct use of scientific terms and symbols is explained.  At the end of the unit a criterion A test is done and the ATL skill is evaluated accordingly.  <b>Communication</b> • I. Communication skills • Reading, writing and using language to gather and communicate information • Use and interpret a range of discipline-specific terms and	- what are the main rules and labels to know for working in a biology and chemistry lab  - what are the most important IB learner profile attributes of a scientist  - what are the most important characteristics of a scientists.  - the concepts of quantity and concentration

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Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP4: Biology: Unit 2: The basis of life	Relationships	Function, Patterns	<p>Scientific and technical innovation</p> <p>The biological revolution, Systems</p>	Scientific and technical innovation help the study of living organisms and the relationship between different levels of organization, which, although differing in complexity, share patterns and functions with all life on earth.	<p><b>A: Knowing and understanding</b></p> <p>i. explain scientific knowledge</p> <p>ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations</p> <p>iii. analyse and evaluate information to make scientifically supported judgments</p> <p><b>B: Inquiring and designing</b></p> <p>i. explain a problem or question to be tested by a scientific investigation</p> <p>ii. formulate a testable hypothesis and explain it using scientific reasoning</p> <p>iii. explain how to manipulate the variables, and explain how data will be collected</p> <p>iv. design scientific investigations</p> <p><b>D: Reflecting on the impacts of science</b></p> <p>i. explain the ways in which science is applied and used to address a specific problem or issue</p> <p>ii. discuss and evaluate the various implications of using science and its application to solve a specific problem or issue</p>	<p>symbols</p> <p><b>Learning Experiences (Research)</b></p> <p>Students will be asked to do research on a topic related to the unit. Feedback will be given for every student's work. In a frontal lesson the requirements, format and method to create references, citations, footnotes and bibliography will be explained. At the end of the unit a criterion D test will be done and the ATL skill will be assessed accordingly.</p> <p><b>Research</b></p> <ul style="list-style-type: none"> <li>• VI. Information literacy skills</li> <li>• Finding, interpreting, judging and creating information</li> <li>• Create references and citations, use footnotes/endnotes and construct bibliography according to recognised conventions</li> </ul>	<p>Ultrastructure of cells - Communication between cells: the importance of the membrane - diffusion, osmosis and active transport - Microorganisms: Bacteria, viruses and microscopic eukaryotes: uses and dangers - Penicillin and antibiotics - Mycobacterium leprae and other pathogens as examples of different agents causing infectious diseases - The importance of microscopy in the development of biology and medicine - Classification of living organisms.</p>



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Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP4: Chemistry: Unit 2 2020-21: Particles and matter	Change	Interaction, Transformation	Scientific and technical innovation  Adaptation, Ingenuity and progress	All substances with each other and change their characteristics and properties; human being has used the physical transformations as a way to adapt the environment to their needs.	iii. apply scientific language effectively iv. document the work of others and sources of information used  <b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported judgments <b>D: Reflecting on the impacts of science</b> iii. apply scientific language effectively iv. document the work of others and sources of information used	Description  <b>Learning Experiences:</b> <b>Communication:</b> Lab activities  Problem solving analysis  Write a procedure  <b>Thinking:</b> Lab activities  Problem solving analysis  Write a procedure  <b>Communication</b> <ul style="list-style-type: none"> <li>• I. Communication skills</li> <li>• Exchanging thoughts, messages and information effectively through interaction</li> <li>• Use appropriate forms of writing for different purposes</li> </ul>	Knowledge and understanding of nature of matter and of the most important separation methods. Changes of states. Colligative properties

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						<ul style="list-style-type: none"> <li>and audiences</li> <li>Negotiate ideas and knowledge with peers and teachers</li> <li>Reading, writing and using language to gather and communicate information</li> <li>Use and interpret a range of discipline-specific terms and symbols</li> <li>Structure information in summaries, essays and reports</li> </ul> <b>Thinking</b> <ul style="list-style-type: none"> <li>VIII. Critical thinking skills</li> <li>X. Transfer skills</li> <li>Utilizing skills and knowledge in multiple contexts</li> <li>Apply skills and knowledge in unfamiliar situations</li> </ul>	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP4: Physics: Unit 2: Motion	Relationships	Function, Movement	<p>Orientation in space and time</p> <p>Scale, Duration, Frequency and variability, Evolution</p>	The functional relationship between space and time can predict the evolution of systems in motion.	<p><b>A: Knowing and understanding</b></p> <p>i. explain scientific knowledge</p> <p>ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations</p> <p>iii. analyse and evaluate information to make scientifically supported judgments</p> <p><b>B: Inquiring and designing</b></p> <p>i. explain a problem or question to be tested by</p>	<p>Description</p> <p><b>Learning Experiences:</b></p> <p><b>Communication:</b></p> <p>They will use Movie Maker and Tracker and graph analysis</p> <p><b>Social:</b></p> <p>Group work to use Tracker and Movie maker</p>	<p>vector and scalar quantities:</p> <p>displacement, velocity VS distance, speed</p> <p>uniform motion</p> <p>acceleration and accelerated motion</p> <p>displacement-time, velocity-time and acceleration-time graphs</p> <p>terminal velocity</p>

## Subject Group Overview

					<p>a scientific investigation</p> <p>ii. formulate a testable hypothesis and explain it using scientific reasoning</p> <p>iii. explain how to manipulate the variables, and explain how data will be collected</p> <p>iv. design scientific investigations</p> <p><b>C: Processing and evaluating</b></p> <p>i. present collected and transformed data</p> <p>ii. interpret data and explain results using scientific reasoning</p> <p>iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation</p> <p>iv. evaluate the validity of the method</p> <p>v. explain improvements or extensions to the method</p>	<p><b>Research:</b></p> <p>In order for students to <i>design scientific investigations</i> they must <i>understand and use technology systems</i>.</p> <p>In order for students to <i>analyse and evaluate information to make scientifically supported judgements</i> they must <i>collect and analyse data to identify solutions and make informed decisions</i>.</p> <p><b>Research</b></p> <ul style="list-style-type: none"> <li>• VI. Information literacy skills</li> <li>• Finding, interpreting, judging and creating information</li> <li>• Collect and analyse data to identify solutions and make informed decisions</li> <li>• Understand and use technology systems</li> </ul>	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 4: Chemistry Unit 3 2020-21: From atoms to molecules	Change	Interaction, Models	<p>Scientific and technical innovation</p> <p>Consequences and responsibility, Models, Ingenuity and progress</p>	Atoms interacts with each other in order to find a more stable configuration through chemical reactions. Chemistry study this processes and give us the possibility to make predictions, based on a cause-effect relationship. These	<p><b>A: Knowing and understanding</b></p> <p>i. explain scientific knowledge</p> <p>ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations</p> <p>iii. analyse and evaluate information to make scientifically supported</p>	<p>Description</p> <p><b>Learning Experiences:</b></p> <p><b>Communication:</b></p> <p>Write a scientific essay on an element</p> <p>Gig saw on historical chemical processes</p>	Understand the atomic structure and predict isotopes compositions through atomic number and atomic mass, Understand and symbols related to elements and molecules. Periodic table and electron configuration.

## Subject Group Overview

				models lead to many of new technological improvements improving our life from several points of view.	judgments <b>D: Reflecting on the impacts of science</b> iii. apply scientific language effectively iv. document the work of others and sources of information used	<b>Social:</b> Gig saw on historical processes  <b>Communication</b> • I. Communication skills • Exchanging thoughts, messages and information effectively through interaction • Use appropriate forms of writing for different purposes and audiences <b>Social</b> • II. Collaboration skills • Working effectively with others • Take responsibility for one's own actions • Listen actively to other perspectives and ideas	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP4: Biology: Unit 3: Molecules and reactions of life	Systems	Energy, Transformation	Scientific and technical innovation  Methods, Products, Processes and solutions	Scientific innovation studies and utilizes the biochemical reactions and transformations of energy supporting the systems of life at different levels of complexity.	<b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported judgments <b>C: Processing and evaluating</b> i. present collected and transformed data	Description  <b>Learning Experiences:</b> <b>Self-management:</b> Students, after having recorded the type and quantities of the nutrients in their daily diet, will evaluate the intake of the main nutrients and will set a goal to improve their diet, planning a strategy to achieve that goal.	Carbohydrates, proteins, fats, minerals and vitamins - enzyme activity - photosynthesis and leaf structure - aerobic and anaerobic cellular respiration.

## Subject Group Overview

					ii. interpret data and explain results using scientific reasoning iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation iv. evaluate the validity of the method v. explain improvements or extensions to the method	This activity will be carried out at first in group, using the diet of an unknown individual in order to understand the process and then apply it to their own diet.  <b>Self-management</b> <ul style="list-style-type: none"> <li>• III. Organization skills</li> <li>• Managing time and tasks effectively</li> <li>• Plan strategies and take action to achieve personal and academic goals</li> </ul>	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP4: Physics: Unit 3: Energy	Change	Transformation, Energy	Globalization and sustainability  Human impact on the environment, Conservation	The laws of conservation imply that energy can change form but can be neither created nor destroyed.	<b>A: Knowing and understanding</b> <ul style="list-style-type: none"> <li>i. explain scientific knowledge</li> <li>ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations</li> <li>iii. analyse and evaluate information to make scientifically supported judgments</li> </ul> <b>C: Processing and evaluating</b> <ul style="list-style-type: none"> <li>i. present collected and transformed data</li> <li>ii. interpret data and explain results using scientific reasoning</li> <li>iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation</li> <li>iv. evaluate the validity</li> </ul>	Description  <b>Learning Experiences:</b>  <b>Social:</b> In order for students to <i>analyse and evaluate information to make scientifically supported judgements</i> they must <i>take responsibility for one's own actions</i> .  <b>Self-management:</b> In order for students to <i>interpret data and explain results using scientific reasoning</i> they must <i>select and use technology effectively and productively</i> .  <b>Social</b>	Forces as vector quantities Free body diagrams and equilibrium Newton's laws Hooke's law and friction Work, energy and power conservation of energy

## Subject Group Overview

					of the method v. explain improvements or extensions to the method	<ul style="list-style-type: none"> <li>• II. Collaboration skills</li> <li>• Working effectively with others</li> <li>• Take responsibility for one's own actions</li> </ul> <b>Self-management</b> <ul style="list-style-type: none"> <li>• III. Organization skills</li> <li>• Managing time and tasks effectively</li> <li>• Select and use technology effectively and productively</li> </ul>	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP 4 IDU Sciences Math 2020/21: Air Pollution  <b>Interdisciplinary Unit</b> Mathematics	Global interaction	<b>Sciences - Sciences</b> Consequences, Environment  <b>Mathematics - Mathematics</b> Representation	Globalization and sustainability  Human impact on the environment	The impact of human action in a globalized world can be represented using mathematical models to understand and predict its consequences on the environment.	<b>Mathematics - Mathematics</b> <b>A: Knowing and understanding</b> i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations ii. apply the selected mathematics successfully when solving problems iii. solve problems correctly in a variety of contexts	Description  <b>Learning Experiences:</b> In order for students to <i>select appropriate mathematics when solving problems in both familiar and unfamiliar situations</i> they must <i>make inferences and draw conclusions</i> .  <b>Research:</b> In order for students to <i>solve problems correctly in a variety of contexts</i> they must <i>understand and use technology systems</i> .  <b>Communication</b> <ul style="list-style-type: none"> <li>• I. Communication skills</li> <li>• Reading, writing and using language to gather and</li> </ul>	Mathematics:  discrete and continuous data data representation evaluating centre and error of a distribution cumulative data spread and standard deviation five-number summary and box-and-whisker plot Science:  Combustion and fossil fuels Production of sulphuric oxides, Nitric Oxides and acid rain Carbon Cycle and global warming Carbon and nitrogen footprint

## Subject Group Overview

						communicate information • Make inferences and draw conclusions <b>Research</b> • VI. Information literacy skills • Finding, interpreting, judging and creating information • Understand and use technology systems	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP4: Biology: Unit 4: Producers and consumers	Relationships	Environment, Interaction	Globalization and sustainability  Conservation, Human impact on the environment	Sustainable ecosystems, based on the relationships between living organisms and on the interactions of biotic components with the abiotic components, are now threaten by globalization that is causing important changes to the environment.	<b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported judgments	Description  <b>Learning Experiences:</b> <b>Self-management:</b> At the end of the unit the students will be asked to work in group and find connections between the different topics studied. Posters with mind-maps and diagrams will be done to show the connections and the main contents to revise for the final exams. After a class discussion every student will create a revision plan and mind maps for summarizing the topics for the final exam.  <b>Self-management</b> • III. Organization skills • Managing time and tasks effectively	Ecosystems (food web, biotic and abiotic components, population, community, habitat) - Factors affecting survival and adaptation - Nutrient cycles - Greenhouse effect and global warming - Ocean plastic pollution

## Subject Group Overview

## Sciences (MYP 5)

Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP5 Chemistry 2020/21 Unit 1: Reactions and quantities	Relationships	Transformation, Evidence	Scientific and technical innovation  Systems, Products, Processes and solutions, Consequences and responsibility	Study of quantitative chemistry and industrial processes provides evidence of a relationship between chemical transformations and society.	<b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported judgments <b>C: Processing and evaluating</b> i. present collected and transformed data ii. interpret data and explain results using scientific reasoning iv. evaluate the validity of the method v. explain improvements or extensions to the method	<ul style="list-style-type: none"> <li>Use appropriate strategies for organizing complex information</li> </ul> Description  <b>Learning Experiences:</b> <b>Thinking:</b> Lab activities Evaluation of collected data Debating differences between legal and illegal substances, consequences of illegal substances use on our health and ethical aspects related to illegal substances traffic.  <b>Thinking</b> <ul style="list-style-type: none"> <li>VIII. Critical thinking skills</li> <li>Analysing and evaluating issues and ideas</li> <li>Interpret data</li> </ul>	The mole and Avogadro's Number.  How to calculate mole number from the mass.  Relationship between quantities and coefficients in chemical reactions.  Quantitative relationship between mass of reactants and mass of products (theoretical yield).  Calculation of Yield in %.
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP5 Physics 2020/21 Unit 1: Electric forces at work	Systems	Function  <b>Other:</b> Development	Scientific and technical innovation  Modernization	The development of systems linked materials' conductive properties has changed the way human beings function and made new futures possible.	<b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations	Description  <b>Learning Experiences:</b> <b>Self-management:</b> Time management in lab project (They will	<b>Knowledge</b>  -Static electricity  - Definition of current and potential difference in a circuit  - Instruments in circuits



iii. analyse and evaluate information to make scientifically supported judgments	have 3 hours to design and process data of an experiment)	and useful symbols
<b>B: Inquiring and designing</b>		- Ohm's laws
i. explain a problem or question to be tested by a scientific investigation	Students will learn Excel and will process data through it.	- Parallel and Series Circuits
ii. formulate a testable hypothesis and explain it using scientific reasoning		- Switches and relays
iii. explain how to manipulate the variables, and explain how data will be collected	<b>Thinking:</b>	- Diodes and LEDs
iv. design scientific investigations	In order for students to <i>design scientific investigations</i> they must <i>make unexpected or unusual connections between objects and ideas</i> and <i>apply existing knowledge to generate new ideas, products or processes</i>	- LDRs and Temperature Dependent Resistors usage
<b>C: Processing and evaluating</b>		<b>Concepts</b>
i. present collected and transformed data		Circuits are systems of interdependent components that form a system. If we change one component as a resistance, we should look at how the other features change because of that.
ii. interpret data and explain results using scientific reasoning	In 2020-2021, due to COVID19 emergency, this ATL could not be evaluated (students have worked on it though right before the School closed);	Diodes, LEDs, LDR and Temperature dependent resistors show this interdependency in their function.
iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation	<b>Research:</b>	Modelling of a circuit requires a good understanding on how temperature has an impact on the circuit.
iv. evaluate the validity of the method	In order for students to <i>present collected and transformed data</i> they must <i>process data and report results</i> .	<b>Skills</b>
v. explain improvements or extensions to the method		- Design a circuit involving one or more resistances (series and parallel)
	<b>Learning Experiences:</b>	
	<b>Thinking:</b>	
	This ATL is learned and	

## Subject Group Overview

monitored through formative and summative assessments to assess objective C (with all the strands)

- Design a circuit involving more complex components as variable resistors, diodes, LEDs, LDRs and Temperature dependent resistors

**Research**

- VI. Information literacy skills
- Finding, interpreting, judging and creating information
- Process data and report results

- Use multimeters with the right scale

- Evaluate the relationship between resistance and properties of a resistor

**Thinking**

- IX. Creative thinking skills
- Generating novel ideas and considering new perspectives
- Make unexpected or unusual connections between objects and/or ideas
- Apply existing knowledge to generate new ideas, products or processes

- Apply Ohm's law to solve simple and complex circuits

- Read a graph of Potential difference versus current

- Draw a graph of potential difference versus current from collected measurements

- Draw the best fit line of the graph and deduce the gradient and intercept from it.

Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP5: Biology 2020/21 Unit 1: How do organisms sustain themselves and survive in the environment?	Systems	Balance, Energy	Scientific and technical innovation  Systems, Products	Scientific and technical innovation help the understanding of how systems in living organisms interact with each other and with the	<b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve	Description	

outer environment, in order to maintain the balance of life.

problems set in familiar and unfamiliar situations  
iii. analyse and evaluate information to make scientifically supported judgments

## **B: Inquiring and designing**

- i. explain a problem or question to be tested by a scientific investigation
- ii. formulate a testable hypothesis and explain it using scientific reasoning
- iii. explain how to manipulate the variables, and explain how data will be collected
- iv. design scientific investigations

## **C: Processing and evaluating**

- i. present collected and transformed data
- ii. interpret data and explain results using scientific reasoning
- iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation
- iv. evaluate the validity of the method
- v. explain improvements or extensions to the method

## **Learning Experiences:**

### **Research:**

Students will be asked to assess, in groups, the data analysis of an experiment related to human physiology done by another student . They will try to describe and explain what are the main strengths and weaknesses and will propose solutions to improve the report.

After a class discussion, students will be asked to process and report results of an experiment (a simulation to analyze the different density of urine samples). Data processing will be part of a summative test (criterion C) and the ATL skill will be evaluated accordingly.

### **Research**

- VI. Information literacy skills
- Finding, interpreting, judging and creating information
- Process data and report results

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Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP5 Physics English 2020/21 IDU: Shape the wave  <b>Interdisciplinary Unit</b> English	Communication	<b>Sciences - Sciences</b> Form  <b>Language acquisition - English</b> <i>Phase 5 - Audience</i>  <i>Phase 6 - Audience</i>	Scientific and technical innovation  Systems, Models, Methods, Processes and solutions	Effective communication of science methods, processes and forms through the selection of appropriate textual conventions and stylistic choices enhances audience engagement in understanding technical innovation.	<b>Sciences - Sciences</b> <b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported judgments <b>C: Processing and evaluating</b> i. present collected and transformed data ii. interpret data and explain results using scientific reasoning iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation iv. evaluate the validity of the method v. explain improvements or extensions to the method  <b>First Assessment 2020</b>  <b>Language acquisition - English</b> <i>Phase A Listening</i>	Description  <b>Learning Experiences:</b> <b>Communication:</b> Strategies include a focus on the terms and techniques used to adapt to context and audience (both in disciplinary and interdisciplinary classes).  A discussion of how the use of different sources (both online and peer-to-peer interviews, websites, online articles) helps to generate new inquiries with a focus both on content and style (form)  Thinking routines will be used explicitly: - Headlines (they will play with a card game to generate effective headlines and learn about headline features)  - Connect, extend, challenge (Connection making, identifying new ideas, raising questions, from different media collected)	English: students learn about newsworthiness in news reporting and practise with the conventions of news reports (informative/explanatory text type; use of headlines; inverted pyramid)  Grammar: use of tenses (present perfect/simple past; reporting verbs and indirect speech)  Science journalism is introduced and contrasted with general news reporting. Students analyse sample authentic articles from "science news for students". Conventions: headlines, different leads (surprise, narrative, bullet leads), content based on background research and interviews with experts in the field.  Students learn that science journalism articles for a general audience contain factual knowledge, which is the result of background research (use of reliable sources) and detailed information resulting from the scientist's

Demonstrate understanding of explicit and implicit spoken information in multimodal texts  
What is the content of the text? What details in the spoken language relate to the big ideas and explicit features of the multimodal text?

(message: literal (explicit) and implicit)  
Demonstrate understanding of relationships between the various components of the multimodal text  
Does the text link to the student's personal world?

Proficient level (phase 5 and 6)

i. identify explicit and implicit information (facts, opinions, messages and supporting details)  
iii. analyse connections

## D Writing

Use written language to communicate with others

What is the role of the student/writer?

Who is the audience?

What is the purpose of the written text?

What is the message?

Demonstrate accurate use of language conventions

How accurately is the language used?

To what extent is the

## Research:

a) Strategies include a lab report format with annotations. Feedback from peers and from teacher is given in formative tasks (given as homework).

b) Research, selection and evaluation of sources by applying reliability criteria such as authority, currency, accuracy, objectivity with content related to the topic of waves. Written feedback on appropriateness of sources is given as part of criterion C of English (see description of task above).

## Thinking:

At the beginning of the unit a mindmap is created on the board to make connections between the concepts (key and related) between different subjects and are then guided to consider the connections between Physics and English thanks to a visible thinking routine called: Think, puzzle, explore

discovery/experiment. They then work on the creation of interviews based on videos with scientific content (tsunamis, gravitational waves) that they have to use for their own article, by applying the conventions discussed in class.

Students carry out their own experiments in the Physics lab about a topic of their choice and are interviewed by their classmates who will then use this content for their final articles. The roles will then be swapped, so that all students actively experience both roles.

The content which is incorporated from **Physics** is the following:

- Factual knowledge
- Vibrations and restoring forces
- Longitudinal and transverse waves
- Sound waves and light waves
- speed of light in a vacuum
- Conceptual knowledge
- What is a wave and how it transfers
- The important features to describe a wave

<p>language comprehensible? Organize information in writing Does the student use an appropriate format? To what extent are the cohesive devices used in the organization of the text? Communicate information with a sense of audience and purpose. How are the relevant information and ideas communicated? How well does the student communicate such that the text makes sense to the reader? Proficient level (phase 5 and 6) i.use a wide range of vocabulary ii.use a wide range of grammatical structures generally accurately iii.organize information effectively and coherently in an appropriate format using a wide range of complex cohesive devices iv.communicate all the required information with a clear sense of audience and purpose to suit the context</p>	<p>Students receive oral feedback. At the end of the unit, in the final reflection (IDU summative criterion D) students reflect on the connections between disciplines and receive a written comment on this ATL.</p> <p><b>Communication</b></p> <ul style="list-style-type: none"> <li>• I. Communication skills</li> <li>• Reading, writing and using language to gather and communicate information</li> <li>• Use and interpret a range of discipline-specific terms and symbols</li> <li>• Find information for disciplinary and interdisciplinary inquiries, using a variety of media</li> </ul> <p><b>Research</b></p> <ul style="list-style-type: none"> <li>• VI. Information literacy skills</li> <li>• Finding, interpreting, judging and creating information</li> <li>• Collect, record and verify data</li> <li>• Make connections between various sources of information</li> <li>• Create references and citations, use footnotes/endnotes and construct bibliography</li> </ul>	<p>- What happens when a wave meets a boundary - The Electromagnetic waves and their peculiarities - Procedural knowledge - New Instrumentation: The frequency generator and the signal generator to produce waves - Method: A mobile app to measure the frequency of a wave - Method: Hands on experience with a spring to understand waves' properties using a spring - Sciences specific skill: data processing and evaluating strands are revised - Method: Experimental approach in finding the relationship between wavelength and period of a wave and in finding the speed of light in air</p>
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						according to recognised conventions	
						<b>Thinking</b> <ul style="list-style-type: none"> <li>• X. Transfer skills</li> <li>• Utilizing skills and knowledge in multiple contexts</li> <li>• Make connections between subject groups and disciplines</li> <li>• Combine knowledge, understanding and skills to create products or solutions</li> </ul>	
Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP5 Chemistry 2020/21 Unit 2: Bonding, chemical transformations and energy	Change	Energy, Transformation	Scientific and technical innovation  Products, Processes and solutions, Risk, Consequences and responsibility	Molecules and elements change their structure in order to decrease their energy; scientific and technical innovations of chemical transformations are fundamental to develop a sustainable way to live.	<b>A: Knowing and understanding</b> <ul style="list-style-type: none"> <li>i. explain scientific knowledge</li> <li>ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations</li> <li>iii. analyse and evaluate information to make scientifically supported judgments</li> </ul> <b>B: Inquiring and designing</b> <ul style="list-style-type: none"> <li>i. explain a problem or question to be tested by a scientific investigation</li> <li>ii. formulate a testable hypothesis and explain it using scientific reasoning</li> <li>iii. explain how to manipulate the variables, and explain how data will be collected</li> </ul>	Description  <b>Learning Experiences:</b>  <b>Thinking:</b> Analyzing and evaluating issues and ideas- Evaluate and manage the risk: Risk assessment has been treated all along MYP 4 and 5 in Chemistry through lab activities, personal feedbacks and formative assessment. In designing an experiment "safety rules and risk assessment" is fundamental section, students have to analyse the risk related to procedure they are developing and substances related to their investigation. A	Electronegativity, Lewis structure.  Bond types: Covalent (polar and pure), Ionic, Metallic bond.  Predict bond type between elements.  Understand how to build and basic covalent molecule, define its geometry and polarity.  Energetic aspects of chemical transformations (endothermic and exothermic transformations).  Calculation of enthalpy change of reaction using bond enthalpies.

iv. design scientific investigations

## **C: Processing and evaluating**

i. present collected and transformed data

ii. interpret data and explain results using scientific reasoning

iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation

iv. evaluate the validity of the method

v. explain improvements or extensions to the method

formative feedback will be given before “pilot experiment”. A final section of safety rules is designed using teacher feedback and pilot experiment.

Utilizing skills and knowledge in multiple contexts- Apply skills and knowledge in unfamiliar situations: concepts related to bondings are used to predict bond type and shape of unknown molecules and bond energy will be applied in unfamiliar contexts through real-life exercises. Moreover, in scientific investigation knowledge and skill are applied to set a suitable investigation (variables and research question) and applied to evaluate both results and procedure.

## **Thinking**

- VIII. Critical thinking skills
- Analysing and evaluating issues and ideas
- Evaluate and manage risk
- X. Transfer skills
- Utilizing skills and knowledge in multiple contexts
- Apply skills and knowledge in



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Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP5 Biology 2020/21 Unit 2: Genetics and heredity.	Identity	Patterns, Models	Identities and relationships  Physical, psychological and social development, Health and well-being, Lifestyle choices	Scientific evidence has led to models that help to understand the patterns of inheritance, determining the genetic information that influences our health, identity and relationships with other people	<b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported judgments <b>D: Reflecting on the impacts of science</b> i. explain the ways in which science is applied and used to address a specific problem or issue ii. discuss and evaluate the various implications of using science and its application to solve a specific problem or issue iii. apply scientific language effectively iv. document the work of others and sources of information used	unfamiliar situations  <b>Learning Experiences:</b> <b>Social:</b> Students will work in groups in the lab to extract the DNA from banana tissues and to create a code for delivering information by using another language. At the end of the unit, the students will reflect on the role, skills and work of themselves and peers during the group work. In particular, they will assess, filling in a questionnaire, the capability (of themselves and peers) to manage and resolve conflicts and work collaboratively in teams and the attitude in listening actively to other perspectives and ideas.  <b>Social</b> • II. Collaboration skills • Working effectively with others • Manage and resolve conflict and work collaboratively in teams	GENETICS: DNA as the information code - Chromosomes - Genes and alleles - Mitosis and meiosis and formation of recombinants - Mutations. HEREDITY: Dominant and recessive - Codominance - ABO blood group - Down syndrome.
Unit Title	Key Concepts	Related Concepts	Global Context &	Statement of Inquiry	Objectives	Approaches to	Content

## Subject Group Overview

			Explorations		Learning		
MYP5 Physics 2020/21 Unit 3: Electromagnetism	Relationships	Consequences, Environment	Globalization and sustainability	Evidence of human impact on the environment can be observed by analyzing the relationships between physical phenomena and their interpretation	<b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported judgments <b>B: Inquiring and designing</b> i. explain a problem or question to be tested by a scientific investigation ii. formulate a testable hypothesis and explain it using scientific reasoning iii. explain how to manipulate the variables, and explain how data will be collected iv. design scientific investigations <b>C: Processing and evaluating</b> i. present collected and transformed data ii. interpret data and explain results using scientific reasoning iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation iv. evaluate the validity of the method v. explain improvements or extensions to the	Description  In order for students to <i>explain scientific knowledge</i> they must <i>apply skills and knowledge in unfamiliar situations</i> .	Magnetism
			Human impact on the environment				Magnetic fields  Effect of magnetic fields on moving charges  The motor effect  LHC  Current and magnetic fields  Induction  Transformers  Generators  Power stations

## Subject Group Overview

Unit Title	Key Concepts	Related Concepts	Global Context & Explorations	Statement of Inquiry	Objectives	Approaches to Learning	Content
MYP5 Biology 2020/21 Unit 3: How have different forms of life arisen?  <b>Interdisciplinary Unit</b> English	Change	<b>Sciences - Sciences</b> Interaction, Environment	Globalization and sustainability	The gradual change over time, through interactions with their environment, has caused the evolution of humans, who are, nowadays, impacting global biodiversity in ways that may not be sustainable.	method  <b>Sciences - Sciences</b> <b>A: Knowing and understanding</b> i. explain scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyse and evaluate information to make scientifically supported judgments	<b>Learning Experiences:</b>  <b>Research:</b> A scientific paper about natural selection and evolution will be read in class and discussed with the students. Students, in groups, will select a scientific paper related to one topic studied in the unit. They will read, analyze and present it to peers trying to communicate effectively a scientific information.  <b>Research</b> • VII. Media literacy skills • Interacting with media to use and create ideas and information • Communicate information and ideas effectively to multiple audiences using a variety of media and formats	Evolution, natural selection, speciation, biodiversity