THE DEMOCRATIC SCHOOL

Science Subject Overview
MYP Years I-III

MYP-I

SR#	Unit Name	Key concepts	Related concepts	Global context	Statement of Inquiry	MYP Objectives	Approaches to learning	Content	Summative Assessment Task
1.	**What do scientists do?**	Relationships	**Science** •Evidence	Identities and relationships **Focus exploration** • roles and role models	To be a scientist means to gather evidence about similarities and differences in nature to understand how things are related.	**Science Year 1 Objectives** **Objective A: Knowing and understanding** **i.** outline scientific knowledge iii. interpret information to make scientifically supported judgments. **Objective B: Inquiring and designing** **i.** outline an appropriate problem or research question to be	**Media literacy skills** •Demonstrate awareness of media interpretations of events and ideas (including digital social media) **Information literacy skills** •Access information to be informed and inform others **Creative-thinking skills** •Use brainstorming and visual diagrams to generate new ideas and inquiries **Collaboration skills** •Take responsibility for one's own actions **Critical-thinking skills** •Practise observing carefully in order to recognize problems •Evaluate evidence	* How do scientists behave? * What is an experiment? * How is the laboratory different? * Scientific inquiry cycle	Research some of the misunderstandings online by searching: Popular scientific misconceptions. 'de-bunk' these misconceptions by explaining the real science behind them. **Criterion A:** Knowing and understanding **Criterion C:** Processing and evaluating

#	Key question	Key concept	Related concepts	Global context	Statement of inquiry	Objectives	ATL skills	Content	Summative assessment
						tested by a scientific investigation iii. outline how to manipulate the variables, and outline how data will be collected **Objective C: Processing and evaluating** **i.** present collected and transformed data	and arguments •Formulate factual, topical, conceptual and debatable questions •Develop contrary or opposing arguments		
2.	**What changes?**	•Change	**Science** •Transformation •Form	Fairness and development **Focus exploration:** Human capability and development	Science enables us to change the form of matter into useful materials that can make the world a better place.	**Science Year 1 Objectives Objective A: Knowing and understanding** **i.** Outline scientific knowledge **ii.** apply scientific knowledge and understanding	**Transfer skills** •Apply skills and knowledge in unfamiliar situations **Information literacy skills** •Access information to be informed and inform others **Critical-thinking skills** •Practice observing carefully in order to recognize problems •Gather and	In this unit, we have classified materials as natural or artificial and suggested uses for them. We have outlined three states of matter using their physical properties and identified	Research online to design, and market a water purifier. Demonstrate the science behind the purification of water **Criterion D:** Reflecting on the impact of science

							to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations **iii.** interpret information to make scientifically supported judgments. **Objective B: Inquiring and designing** **i.** outline an appropriate problem or research question to be tested by a scientific investigation **ii.** outline a testable prediction using scientific reasoning	organize relevant information to formulate an argument •Interpret data •Draw reasonable conclusions, and generalizations •Analyze complex concepts and projects into their constituent parts and synthesize them to create new understanding **Creative-thinking skills** •Create novel solutions to authentic problems •Make guesses, ask "what if" questions and generate testable hypotheses •Apply existing knowledge to generate new ideas, products, or processes	what happens when they change. We have classified mixtures, suspensions, solutions, and pure substances, and defined solutions, solutes, and solvents. We have then explained how dissolving occurs and described some special forms of solutions such as some crystals. We carried out experiments that demonstrated ways to separate mixtures, suspensions, and solutions using their	

						iii. outline how to manipulate the variables, and outline how data will be collected		physical properties, and finally, we identified some chemical and biological changes.	
						iv. design scientific investigations.			
						Objective C: Processing and evaluating			
						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.			
						Objective D: Reflecting on the impacts of science			
						i. summarize the ways in which science is applied and used to address a specific problem or issue			
						ii. describe and summarize the various implications of using science and its application in solving a specific			

#	Statement of Inquiry / Question	Key Concept	Related Concepts	Global Context	Statement of Inquiry	Objectives	ATL Skills	Content	Assessment
						problem or issue iii. apply scientific language effectively **iv.** document the work of others and sources of information used.			
3.	**How do living things work?**	Relationships	**Science** •Function •Form **Focus exploration:** Commonality, diversity, and interconnection	Globalization and sustainability	By understanding the relationship between the necessities of life and the specialized forms and functions of living things, we can make decisions and take action for healthier and more sustainable lifestyles.	**Science** **Year 1** **Objectives** **Objective A: Knowing and understanding** i. Outline scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to	**Information literacy skills** •Create references and citations, use footnotes/endnotes, and construct a bibliography according to recognized conventions **Media literacy skills** •Locate, organize, analyze, evaluate, synthesize and ethically use information from a variety of sources and media (including digital social media and online networks)	Learners will find out what characteristics and needs all living things share, and which are specialized for different types of organisms. They will explore the relationship between the specialized forms and functions of living things and where and how they	Research, design, and carry out an experiment to identify the best conditions to produce either bean sprouts, yogurt, or bread dough. **Criteria A:** Knowing and Understanding **Criteria B** Planning and designing **Criterion C:** Processing and evaluating

							problems set in unfamiliar situations	•Demonstrate awareness of media interpretations of events and ideas (including digital social media)	live.

problems set in unfamiliar situations

iii. interpret information to make scientifically supported judgments.

Objective B: Inquiring and designing

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

•Demonstrate awareness of media interpretations of events and ideas (including digital social media)

Critical-thinking skills

•Draw reasonable conclusions and generalizations

•Revise understanding based on new information and evidence

Communication skills

•Use a variety of media to communicate with a range of audiences

•Interpret and use effectively modes of non-verbal communication

•Share ideas with multiple audiences using a variety of digital environments and media.

•Make inferences and draw conclusions

•Paraphrase

live.

* Then they will take action by advising people how to save money and eat more healthily by producing and growing some of their own food.

							iv. design scientific investigations.	accurately and concisely		
							Objective C: Processing and evaluating			
							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.			

| 4. | What makes change happen? | Change | **Science** Energy | Globalization and sustainability

Focus Exploration:

Consumption, conservation, scarcity | Through controlling energy we can make changes happen that have an impact on the way people live now and in the future. | **Science Year 1 Objectives Objective A: Knowing and understanding**

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.

Objective B: Inquiring and designing | **Communication skills**
•Negotiate ideas and knowledge with peers and teachers
Transfer skills
•Apply skills and knowledge in unfamiliar situations
Collaboration skills
•Listen actively to other perspectives and ideas
Information literacy skills
•Use critical literacy skills to analyze and interpret media communications
•Access information to be informed and inform others
•Collect and analyze data to identify solutions and make informed decisions
Creative-thinking skills
•Design improvements to existing machines, media and technologies
Critical-thinking skills | In this unit , learners will find out how energy is changed, how it is measured, and how it can be controlled. Explore different ways to change energy, temperature scales, and ways to reduce energy loss. Take action to find ways to use energy sustainably, with the minimum impact on global climate. | Read the article to answer questions about how we can save money and save the planet. They then research a chosen method of preventing heat loss in households.

Criteria A: Knowing and understanding

Criteria D: Reflecting on the impacts of Science |

						i. outline an appropriate problem or research question to be tested by a scientific investigation	•Practice observing carefully in order to recognize problems •Gather and organize relevant information to formulate an argument •Interpret data •Test generalizations and conclusions		
						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 investigations.			
						Objective C: Processing and evaluating			
						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. **Objective D: Reflecting on the impacts of science** i. Summarize the ways in which science is applied and used to address a specific			

						problem or issue ii. describe and summarize 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.			
5.	**How can we study the living world?**	Systems	**Science** •Balance •Interaction	Scientific and technical innovation **Focus Exploration:**	Scientists have developed methods and tools to understand and maintain the	**Science Year 1 Objectives Objective A: Knowing and understanding**	**Information literacy skills** •Collect and analyze data to identify solutions and make informed decisions **Creative-thinking skills**	In this unit, learners will discover the definition of an ecosystem and the essential interactions	Design and construct their own mesocosm **Criteria B:** Planning and designing **Criteria C:**

					Adaptation, ingenuity, and progress	interactions that keep ecosystems in balance.	i. Outline scientific knowledge	•Apply existing knowledge to generate new ideas, products, or processes	between living and non-living elements that contribute to balanced and healthy ecosystems.	Processing and evaluating
							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. **Objective B: Inquiring and designing** i. outline an appropriate problem or research question to be tested by a	•Practice visible thinking strategies and techniques **Organization skills** •Plan short- and long-term assignments; meet deadlines •Keep an organized and logical system of information files/notebooks •Use appropriate strategies for organizing complex information **Reflection skills** •Develop new skills, techniques, and strategies for effective learning •Consider personal learning strategies •Focus on the process of creating by imitating the work of others	They will investigate the impact of human influence on ecosystem balance and health, both through scientific innovations and their everyday choices. * Furthermore, students will actively engage in designing and conducting experiments to assess the influence of various factors on	

							scientific investigation		ecosystem health.	
							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 investigations.			
							Objective C: Processing and evaluating			
							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.			
						Objective D: Reflecting on the impacts of science			
						i. Summarize the ways in which science is applied and used to address a specific problem or issue			
						ii. describe and summarize the various implications of using science			

#	Statement/Question	Key concept	Related concepts	Global context	Statement of inquiry	Objectives	ATL skills	Content	Assessment
						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.			
6.	**Where do we fit into the world?**	•Systems	**Science** •Models •Environment	Orientation in space and time **Focus Exploration:** Scale, duration, frequency, and variability	We have learnt about our place in the systems that affect life on Earth through looking beyond into space and making models.	**Science** **Year 1** **Objectives** **Objective A:** **Knowing and understanding** i. Outline scientific knowledge ii. apply scientific knowledge and understanding to solve problems set	**Organization skills** •Select and use technology effectively and productively **Collaboration skills** •Delegate and share responsibility for decision-making **Information literacy skills** •Access information to be informed and inform others •Make connections between various sources of	What is in the solar system? Where is Earth? The Earth's systems What is the structure of our planet? How do different systems of Earth affect each other? How do models help	Research on space missions that have been used to find out about Earth systems. Choose one research mission to investigate in more detail, and present your work. Criteria D: Reflecting on the impacts of Science

| | | | | | | | in familiar situations and suggest solutions to problems set in unfamiliar situations

iii. interpret information to make scientifically supported judgments.

Objective B: Inquiring and designing

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, | information
•Process data and report results
•Understand and use technology systems
Creative-thinking skills
•Apply existing knowledge to generate new ideas, products or processes
Communication skills
•Use a variety of media to communicate with a range of audiences
Critical-thinking skills
•Gather and organize relevant information to formulate an argument
•Interpret data
•Evaluate evidence and arguments
•Draw reasonable conclusions and generalizations
•Evaluate and manage risk
•Use models and | us to understand Earth's systems? How does knowledge from space exploration help us to understand the Earth? | |

							and outline how data will be collected	simulations to explore complex systems and issues		
							iv. design scientific investigations.			
							Objective C: Processing and evaluating			
							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.			
						Objective D: Reflecting on the impacts of science			
						i. summarize the ways in which science is applied and used to address a specific problem or issue			
						ii. describe and summarize 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.			

MYP-II

SR#	Unit Name	Key concepts	Related concepts	Global context	Statement of Inquiry	MYP Objectives	Approaches to learning	Content	Summative Assessment
1.	**Where are we now and where might we be going?**	Relationships	**Science** •Models •Movement	Orientation in space and time **Focus exploration** Scale, duration, frequency, and Evolution	Through making models of the world we have understood how place and time relate to motion and we have made the world seem a smaller place.	**Science Year 1 Objective Objective A: Knowing and understanding** ii. apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations	**Information literacy skills** •Collect, record, and verify data •Access information to be informed and inform others •Make connections between various sources of information •Present information in a variety of formats and platforms •Collect and analyze data to	Learners can know how early humans traveled across the Earth and summarize the ways in which human civilization developed measurements. They construct charts and graphs to present information on motion in space and time, and determine speeds, velocities, and accelerations	Research and find out about the impact of automobile use on local and global environments and advise to motorists to minimize the impact of their vehicles. Present the information. **Criterion D:** Reflecting on the impact of science.

							iii. interpret information to make scientifically supported judgments. **Objective C: Processing and evaluating** i. present collected and transformed data ii. interpret data and outline results using scientific reasoning **Objective D: Reflecting on the impacts of science** i. summarize the ways in which science is applied and used to address a specific	identify solutions and make informed decisions •Understand and use technology systems **Critical-thinking skills** •Practise observing carefully in order to recognize problems •Gather and organize relevant information to formulate an argument •Interpret data •Evaluate evidence and arguments •Revise understanding based on new information and evidence •Analyse complex concepts and projects into	from those charts. Describe how forces affect motion, and demonstrate what happens when forces balance. Describe how transportation systems have developed in time, and evaluate the impacts of mass transportation on local and global environments.	

| | | | | | | problem or issue

iv. document the work of others and sources of information used. | their constituent parts and synthesize them to create new understanding
•Propose and evaluate a variety of solutions
•Identify obstacles and challenges
Media literacy skills
•Locate, organize, analyse, evaluate, synthesize and ethically use information from a variety of sources and media (including digital social media and online networks)
Creative-thinking skills
•Practise visible thinking | | |

							strategies and techniques		
2.	**Who are we?**	•Relationships	**Science** •Evidence •Patterns	**Science** **Focus Exploration:** Identity formation	Identities and relationship	Because scientists understand the relationships between genes and Inherited characteristics, we can use genetic patterns as evidence for identification and decision-making.	**Science Year 1 Objectives Objective A: Knowing and understanding** 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.	**Critical-thinking skills** •Practise observing carefully in order to recognize problems •Gather and organize relevant information to formulate an argument •Consider ideas from multiple perspectives •Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding •Use models and simulations to explore complex	In this unit, we have learned how and why genes are responsible for our characteristics. We have learned about the connection between genes, proteins, and our traits. We inquired into how genetic traits are passed from parents to offspring, and the cellular processes that make reproduction possible. We learned how to make predictions about some genetic traits using Punnett squares, and	Take Action: Act as forensic DNA Analyst and solve a robbery case using the genetic information provided. Describe and apply scientific knowledge to solve this problem, analyze the information and present. **Criterion A:** Knowing and understanding

							Objective C: Processing and evaluating 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. **Objective D: Reflecting on**	systems and issues **Reflection skills** •Consider ethical, cultural and environmental implications **Information literacy skills** •Collect and analyse data to identify solutions and make informed decisions •Process data and report results **Creative-thinking skills** •Use brainstorming and visual diagrams to generate new ideas and inquiries	explored how scientists use technology to create DNA fingerprints to identify individuals. We have described the function of genes and how genetic characteristics are inherited, applied our understanding of genetics to support judgments about the use of genetic information, analysed evidence and data to make scientifically supported judgments. discussed whether or not DNA evidence should be used in legal decisions, and	

						the impacts of science ii. describe and summarize the various implications of using science and its application in solving a specific problem or issue		documented the resources used to support our judgments	
3.	**How do we respond to our world?**	Change	**Science** •Consequences	Scientific and technical innovation **Focus Exploration:** The biological revolution, adaptation, and stimuli response	Scientific innovations designed to enhance our ability to perceive and respond to change in our surroundings have consequences on our survival.	**Science Year 1 Objectives Objective A: Knowing and understanding** i. Outline scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar situations and	**Creative-thinking skills** •Use brainstorming and visual diagrams to generate new ideas and inquiries •Make unexpected or unusual connections between objects and/or ideas •Make guesses, ask "what if" questions and generate	* How do organisms perceive and respond to changes in their surroundings? * Senses and sense organs * How do species become adapted, over the long term, to conditions in their environment? * Natural selection	Take Action: Research and Produce a mini-documentary about technology that enhances the way to perceive or sense different stimuli. **Criterion D:** Reflecting on the impact of science.

							suggest solutions to problems set in unfamiliar situations	testable hypotheses		
							iii. interpret information to make scientifically supported judgments.	•Apply existing knowledge to generate new ideas, products or processes		
							Objective D: Reflecting on the impacts of science	•Practise visible thinking strategies and techniques		
							i. Summarize the ways in which science is applied and used to address a specific problem or issue	**Critical-thinking skills**		
							ii. describe and summarize the various implications of using science and its application in solving a	•Gather and organize relevant information to formulate an argument		
								•Interpret data		
								•Draw reasonable conclusions and generalizations		
								•Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding		

#										
							specific problem or issue iii. apply scientific language effectively iv. document the work of others and sources of information used.	•Use models and simulations to explore complex systems and issues		
4.	How do we map matter?	•Change	**Science** •Patterns •Models	Scientific and technical innovation **Focus exploration(s)** • Products, processes, solutions and chemical reactions	By changing matter we can identify patterns in properties that help us to make models and the models help us invent new kinds of materials.	**Science Year 1 Objectives Objective A: Knowing and understanding** i. Outline scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar situations and suggest	**Transfer skills** •Apply skills and knowledge in unfamiliar situations **Creative-thinking skills** •Create novel solutions to authentic problems **Information literacy skills** •Collect, record and verify data •Access information to be informed and inform others	* What substances are pure and what substances are impure? * How do pure substances combine? * What is an atom? * How can patterns of properties be used to organize elements? * What kinds of chemical reactions can take place?	Stomach ache -This is a full investigation in which students use the stimulus context of food scientists working to test the effectiveness of indigestion remedies. **Criteria B:** Planning and designing **Criteria C:** Processing and evaluating

| | | | | | | | solutions to problems set in unfamiliar situations

iii. interpret information to make scientifically supported judgments.

Objective B: Inquiring and designing

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 | •Collect and analyse data to identify solutions and make informed decisions
•Process data and report results
Critical-thinking skills
•Gather and organize relevant information to formulate an argument
•Interpret data
•Evaluate evidence and arguments
•Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding | * How can we represent the chemical change?
* Breaking it down: Decomposition, Oxidation and Reduction
* How do we exploit the properties of chemicals?
* Acids and alkalis
* Detecting it? | |

						how data will be collected			
						iv. design scientific investigations.			
						Objective C: Processing and evaluating			
						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. **Objective D: Reflecting on the impacts of science** i. Summarize the ways in which science is applied and used to address a specific problem or issue ii. describe and summarize 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.			
5.	**What does a wave tell us?**	•Relationships	**Science** •Form •Energy	Personal and cultural expression **Focus exploration(s)** • Communication and expression	Understanding the relationships between different forms of wave energy helps us better communicate and express our thoughts.	**Science Year 1 Objectives Objective A: Knowing and understanding** 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	**Collaboration skills** •Listen actively to other perspectives and ideas **Creative-thinking skills** •Apply existing knowledge to generate new ideas, products or processes **Critical-thinking skills** •Practise observing carefully in order to recognize problems •Gather and organize relevant information to formulate an argument •Interpret data	* What is a wave? * What kind of energy travels as waves? * What is light? * How are we sensitive to energy that travels as waves? * What other kinds of electromagnetic radiation are there? * Do artists and scientists have anything to say to each other? * How are we sensitive to sound waves?	Investigate the sound absorption properties of different materials, or different thicknesses of material, and then to apply the findings to the real-life problem of noise reduction near an airport. **Criteria B:** Planning and designing **Criteria C:** Processing and evaluating **Objective D:** Reflecting on the impacts of science

						scientifically supported judgments.	•Evaluate evidence and arguments		
						Objective B: Inquiring and designing 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 investigations. **Objective C: Processing**	•Draw reasonable conclusions and generalizations •Revise understanding based on new information and evidence •Develop contrary or opposing arguments **Information literacy skills** •Access information to be informed and inform others •Make connections between various sources of information •Present information in a variety of formats and platforms **Communication skills**		

						and evaluating 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. **Objective D: Reflecting on the impacts of science**	•Negotiate ideas and knowledge with peers and teachers		

						i. Summarize the ways in which science is applied and used to address a specific problem or issue ii. describe and summarize 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.			

| 6. | How do our planet work? | Systems | **Science** •Models •Patterns | Globalization and sustainability **Focus exploration** • Systems and their interaction, models | Modelling interactions between Earth's systems allows us to understand patterns that we can use to secure or improve human experiences. | **Science Year 1 Objectives Objective A: Knowing and understanding** 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. **Objective B: Inquiring and designing** | **Creative-thinking skills** •Use brainstorming and visual diagrams to generate new ideas and inquiries •Consider multiple alternatives, including those that might be unlikely or impossible •Create novel solutions to authentic problems •Apply existing knowledge to generate new ideas, products or processes **Organization skills** •Use appropriate strategies for organizing complex information **Critical-thinking skills** | * What's out there? * What natural systems are necessary to maintain life on earth? * In what ways do the systems on Earth interact? * What processes and events have contributed to local and global conditions on Earth? * How do the interactions between Earth's systems influence our living conditions? * To what extent is it possible to use science to prevent or reduce natural disasters? | Research models and evidence of the climate and geography and make a proposal in which you have identified an ideal location to build a new city and also demonstrate the scientific knowledge about ecospheres and systems of Earth. **Criterion A:** Knowing and understanding |

| | | | | | | | 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 investigations.

Objective C: Processing and evaluating

i. present collected and transformed data

ii. interpret data and | •Gather and organize relevant information to formulate an argument
•Interpret data
•Evaluate evidence and arguments
•Draw reasonable conclusions and generalizations
•Revise understanding based on new information and evidence
•Consider ideas from multiple perspectives
•Develop contrary or opposing arguments
•Use models and simulations to explore complex systems and issues
•Identify trends | | |

						outline results using scientific reasoning	and forecast possibilities		
						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.			
						Objective D: Reflecting on the impacts of science			
						i. Summarize the ways in which science is applied and used to address a specific problem or issue			

					ii. describe and summarize 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.			

MYP-III

SR. #	Unit Name	Key concepts	Related concepts	Global context	Statement of Inquiry	MYP Objectives	Approaches to learning	Content	Summative Assessment
1.	**How do we make it work?**	Change	**Science** •Energy •Movement	Scientific and technical innovation	Machines have revolutionized life by making	**Science Year 3 Objectives Objective A:**	**Information literacy skills** •Use critical literacy skills to	What is a machine? What do we mean by	Design and build working energy model.

					Focus Exploration: Energy resources, Machines, and consequences	it easier to change energy from stored forms to movement and back again.	**Knowing and understanding** i. describe scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyze information to make scientifically supported judgments. **Objective B: Inquiring and designing** i. describe a problem or question to be tested by a scientific investigation	analyze and interpret media communications •Collect, record, and verify data •Access information to be informed and inform others •Make connections between various sources of information •Process data and report results •Evaluate and select information sources and digital tools based on their appropriateness to specific tasks **Media literacy skills** •Seek a range of perspectives from multiple and varied sources **Organization skills**	energy? How do we measure energetic change? What is efficiency? What kind of machines are there? What are fuels? How do energy changes determine chemical changes? Will energy ever run out? What have been the good and bad consequences of using machines to work?	**Criteria A:** Knowing and understanding **Criteria B:** Inquiring and designing

| | | | | | | | 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.

Objective C: Processing and evaluating

i. present collected and transformed data

ii. interpret data and describe results using scientific reasoning | •Plan short- and long-term assignments; meet deadlines
•Set goals that are challenging and realistic
Collaboration skills
•Practise empathy
•Help others to succeed
Creative-thinking skills
•Make guesses, ask "what if" questions and generate testable hypotheses
Communication skills
•Interpret and use effectively modes of non-verbal communication
•Negotiate ideas and knowledge with peers and teachers
•Read critically and for | | |

| | | | | | | | 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.

Objective D: Reflecting on the impacts of science

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 | comprehension
•Make inferences and draw conclusions
•Paraphrase accurately and concisely
•Take effective notes in class
•Make effective summary notes for studying
•Use a variety of organizers for academic writing tasks
•Structure information in summaries, essays and reports
Critical-thinking skills
•Practise observing carefully in order to recognize problems
•Recognize unstated assumptions and bias
•Interpret data | | |
|---|---|---|---|---|---|---|---|---|---|---|

						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.	•Evaluate evidence and arguments •Draw reasonable conclusions and generalizations •Test generalizations and conclusions •Consider ideas from multiple perspectives •Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding •Identify trends and forecast possibilities		
2.	**What should I eat?**	Relationships	**Science** •Consequences •Function	Scientific and technical innovation **Focus Exploration:**	Because what we consume is related to, and has consequences on how our bodies function and	**Science Year 3 Objectives Objective A: Knowing and understanding**	**Information literacy skills** •Process data and report results **Organization skills** •Use	In this unit, we have applied scientific reasoning to support our judgments about what to consume in	Take action! Dietitian. Students take the role of a dietician. They apply the science of nutrition and the human body to design a meal plan for a client based on their client's food preferences, activity levels

| | | | | | Systems, models, methods | feel, we can choose what we eat and drink based on scientific principles and developments. | 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.

Objective 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 | appropriate strategies for organizing complex information
Critical-thinking skills
•Test generalizations and conclusions
•Consider ideas from multiple perspectives
•Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding
•Use models and simulations to explore complex systems and issues | order to be healthy. We have designed and carried out a complete investigation and applied our results to form a conclusion about the presence of enzymes in raw foods We have investigated and inquired into different trends and products that claim to have healthy benefits for different lifestyles and food preferences. Finally, we have applied our knowledge and understanding of the nutrients the | and health or athletic goals. They will present their client with the meal plan, together with a scientific that meets the needs of their clients.

Criterion A: Knowing and understanding |

							using scientific reasoning		body needs and the processes the body goes through in order to formulate a meal plan for a balanced lifestyle.	
							iii. describe how to manipulate the variables, and describe how data will be collected			
							iv. design scientific investigations.			
							Objective 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			

#	Unit	Key concept	Related concepts	Global context	Statement of inquiry	Objectives	ATL skills	Inquiry questions	Summative assessment
						the scientific investigation iv. discuss the validity of the method v. describe improvements or extensions to the method.			
3.	**How do our bodies work?**	Systems	**Science** •Balance •Function	Personal and cultural expression **Focus exploration:** • lifestyle, body systems and Communicate scientific information	By understanding how our body systems function, people can learn to make decisions for balanced and healthy lifestyles.	**Science Year 3 Objectives** **Objective A: Knowing and understanding** i. describe scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations iii. analyze information to	**Communication skills** •Use appropriate forms of writing for different purposes and audiences •Use a variety of media to communicate with a range of audiences •Negotiate ideas and knowledge with peers and teachers •Participate in, and contribute to, digital social media networks.	* What are the structures and functions of different body systems? * How do our body systems work together? * How and why do our bodies change as we get older? * What are the characteristics of social interactions and group behavior? * How can understanding body systems help us to make decisions	Take Action! Create a communication platform to help teens to understand the anatomy and physiology of their bodies and then use this understanding to make decisions for more healthier and balanced lifestyles. **Criterion A:** Knowing and understanding **Criterion D:** Reflecting on the impact of science

| | | | | | | | make scientifically supported judgments.

Objective 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. | **Organization skills**
•Use appropriate strategies for organizing complex information
Creative-thinking skills
•Generate metaphors and analogies
Critical-thinking skills
•Draw reasonable conclusions and generalizations
•Consider ideas from multiple perspectives
•Use models and simulations to explore complex systems and issues | for a balanced and healthy live? | |

						Objective 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.			
						Objective D: Reflecting on			

						the impacts of science i. describe the ways in which science is applied and used to address a specific problem or issue ii. discuss and analyze 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			

#	Statement/Question	Key concept	Related concepts	Global context	Statement of inquiry	Objectives	ATL skills	Inquiry questions	Assessment
									used.
4.	**How do humans impact the natural world?**	Change	**Science** •Consequences •Environment	Fairness and development

Focus exploration(s)

•Human capability, development and Ecology impact | The environment changes as a consequence of how we develop and manage natural resources around the world. | **Science Year 3 Objectives Objective A: Knowing and understanding**

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.

Objective C: Processing and evaluating | **Reflection skills** •Consider ethical, cultural, and environmental implications **Organization skills** •Plan short- and long-term assignments; meet deadlines •Set goals that are challenging and realistic **Critical-thinking skills** •Gather and organize relevant information to formulate an argument •Interpret data •Draw reasonable conclusions and generalizations •Revise understanding based on new information and | 1. What diverse values and perspectives do individuals hold regarding the environment?

2. What defines the attributes of a thriving environment?

3. In what ways does the environment undergo alterations?

4. How do people go about the development and administration of natural resources?

5. How does the environment transform as a | Case study-processing petrochemical products'

Read the given information about petrochemicals and write down the points that you find most interesting and questions that you have. then write your response to the provided questions.

Criterion A: Knowing and understanding

Criterion D: Reflecting on the impact of science |

| | | | | | | 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.

Objective D: Reflecting on the impacts of science

i. describe the ways in which | evidence
•Consider ideas from multiple perspectives
Collaboration skills
•Practise empathy
•Help others to succeed
Communication skills
•Paraphrase accurately and concisely
•Preview and skim texts to build understanding
Creative-thinking skills
•Generate metaphors and analogies | result of the management and development of natural resources? | |

#	Title					Objectives	Skills	Questions	Task
						science is applied and used to address a specific problem or issue ii. discuss and analyze 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.			
5.	**How do we put electricity and**	Relationships	**Science** •Balance •Transformation •Form	Orientation in space and time **Focus**	Electrical and magnetic forces fill space as	**Science Year 3 Objectives Objective A:**	**Information literacy skills** •Collect, record, and verify data	* How do force fields affect matter? * What causes	This investigative task models the solution of an engineering problem – the choice of conductor to use

				exploration(s)	fields;	Knowing and understanding	•Present	magnetic	in a computer network.
	magnetism to work?			• Scale, duration, frequency, and variability	understanding their form and relationships allows us to transform energy in useful ways.	**Knowing and understanding** 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. **Objective B: Inquiring and designing** i. describe a problem or question to be tested by a scientific investigation	information in a variety of formats and platforms •Collect and analyze data to identify solutions and make informed decisions **Transfer skills** •Apply skills and knowledge in unfamiliar situations **Creative-thinking skills** •Make guesses, ask "what if" questions and generate testable hypotheses •Apply existing knowledge to generate new ideas, products or processes •Practise visible thinking strategies and techniques **Critical-thinking skills**	force? * What causes electric forces? * How are electric and magnetic fields related? * How can electrical energy be harnessed? * How do electrical circuits work? * How does it help to be organized?	Research the conductors used in computer network cabling systems, and then design and carry out an investigation to determine the factors affecting the resistance of a metal conductor. Finally, they write a report on the best kinds of cabling to use. **Criteria B:** Inquiring and designing **Criteria C:** Processing and evaluating **Criterion D:** Reflecting on the impact of science

| | | | | | | 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.

Objective C: Processing and evaluating

i. present collected and transformed data

ii. interpret data and describe results using scientific reasoning | •Practise observing carefully in order to recognize problems
•Interpret data
•Evaluate evidence and arguments
•Draw reasonable conclusions and generalizations
•Evaluate and manage risk
•Propose and evaluate a variety of solutions
•Use models and simulations to explore complex systems and issues | | |

						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.			
						Objective D: Reflecting on the impacts of science			
						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.			
6.	**How can we connect?**	Systems	**Science** •Interaction •Energy	Personal and cultural expression **Focus exploration(s)** • technology, communication, and their impact	We interact and express ourselves through systems that manipulate information as different forms of energy.	**Science Year 3 Objectives Objective A: Knowing and understanding** i. describe scientific knowledge ii. apply scientific knowledge and understanding to solve	**Information literacy skills** •Collect, record, and verify data •Access information to be informed and inform others •Make connections between various sources of information •Process data and report	1. How do you convey messages? 2. What tools have we created to control waves? 3. Pondering over it 4. A broader perspective 5. Perceive it	The first task empowers students and teachers to research online safety and to raise awareness of these issues. While many developed countries now have extensive, government or lawenforcement sponsored initiatives to keep young people safe online, it is essential that schools worldwide play their part. As online telecommunications develop so quickly, no sooner has a danger been

| | | | | | | | problems set in familiar and unfamiliar situations

iii. analyze information to make scientifically supported judgments.

Objective 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 | results
•Understand and use technology systems
Critical-thinking skills
•Practise observing carefully in order to recognize problems
•Interpret data
•Evaluate evidence and arguments
•Revise understanding based on new information and evidence
Collaboration skills
•Help others to succeed
•Encourage others to contribute
•Exercise leadership and take on a variety of roles within groups
Communication | 6. In what ways can waves carry information?

7. Waiting by the phone

8. What are the pros and cons of analog and digital systems?

9. How can we efficiently exchange information?

10. What ethical obligations come with communicating through digital media? | removed than new ones are discovered, so the most effective way to keep young people safe is to equip them with the thinking tools and skills to appraise each situation for danger as it arises. The second task allows students to enrich their understanding of the cell phone network through research and analyse the stages in the processing of a cell signal. A good treatment of the subject will apply understanding of attenuation, signal modulation, frequency switching and handover.

 Criteria A: Knowing and understanding **Criteria D:** Reflecting on the impact of science |

							how data will be collected iv. design scientific investigations. **Objective 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	**skills** •Negotiate ideas and knowledge with peers and teachers •Make inferences and draw conclusions		

| | | | | | | or extensions to the method.

Objective D: Reflecting on the impacts of science

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. -			