RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Content

Grade 6 Year 1	1. Structure & Function of Living Things (Cells) 2. Materials & Their Structure 3. Acids & Alkalis – Neutralization Reaction 4. Microorganism	**Grade 9 Year 4**		
Grade 7 Year 2	1. Respiration 2. Force & Energy 3. Chemical Reactions 4. Properties of Materials	1. Patterns of Life 2. Processes & Molecules that Support Life 3. The Fragile Balance: Tracking the Ripple Effects of Human Change	1. Atomic Structure & Periodic Table 2. Chemical Bonding 3. Chemical Formula & Equations 4. Redox Reactions 5. Stoichiometry	1. Units & Measurements 2. Kinematics 3. Dynamics 4. Work & Energy
Grade 8 Year 3	1. Photosynthesis & the Carbon Cycle 2. Properties of Materials 3. Forces & Energy 4. Maintaining life 5. Rearranging Atoms 6. Sound & space 7. Genes & Inheritance	**Grade 10 Year 5**		
		1. Function & Interaction 2. Well-being: Respiration, gas exchange & Excretion 3. Dynamic Balance 4. Decoding Inheritance	1. Chemical Energetics 2. Rate of reaction 3. Reversible Reactions & Equilibrium 4. Acids & Bases 5. Organic Chemistry	1. Thermal Effects 2. Waves & Sounds 3. Rays & Waves 4. Electricity

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 6 (MYP 1)

6

20 hours		ATL Skills	Content
Unit Title (1)	**Structure & Function of Living Things (Cells)**	**Thinking Skills – Critical Thinking** Interpreting microscope images, comparing plant and animal cells, drawing conclusions about structure–function relationships, evaluating biotechnology applications, considering ethical implications. **Thinking Skills – Creative Thinking** Building 3D cell models, brainstorming ideas, generating hypotheses, using visual diagrams and inquiry questions. **Thinking Skills – Transfer** Applying knowledge about cells to unfamiliar situations and real-life contexts such as health, medicine, and biotechnology. **Social Skills – Collaboration** Working effectively in lab groups, participating in pair discussions, following lab rules, peer collaboration during investigations. **Research Skills – Information literacy** Collecting and recording data from microscope observations, researching biotechnology applications, processing data, making connections between sources, creating references and citations. **Communication Skills** Presenting information through diagrams, reports, and presentations, discussing ideas in groups, structuring scientific explanations clearly. **Self-Management Skills – Organization** Maintaining organized lab notebooks, planning assignments, preparing for assessments, organizing files and materials.	**Structure & Function of Living Things (Cells)** - Cells - Plant cells - Animal cells - Specialized cells - Cells, tissues and organs.
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Relationships**		
Related concepts	**Structure** **Function** **Systems**		
Global context	**Scientific & Technical Innovation** Exploring how understanding cells helps humans make discoveries in medicine, technology, and biology.		
Statement of inquiry	The **relationships** between the **structure** and organization of cells within biological **systems** determine how living organisms **function** and adapt.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 6 (MYP 1)

6

20 hours		ATL Skills	Content
Unit Title (2)	**Materials & Their Structure**	**Thinking Skills: Critical** Interpreting particle diagrams, explaining changes of state, analyzing graphs and temperature data, drawing conclusions about particle behaviour, considering environmental implications of synthetic materials. **Thinking Skills – Creative Thinking** Building particle and atom models, brainstorming explanations for particle movement, generating hypotheses for investigations, using simulations and visual models. **Thinking Skills – Transfer** Applying the particle model to unfamiliar and real-world situations, connecting particle theory to observable properties and technological uses of materials. **Research Skills: Information literacy** Collecting and analyzing temperature data, gathering information about materials and separation methods, processing data into graphs, recording scientific observations. **Self-management – Organization** Maintaining organized notebooks, conducting safe laboratory work, planning investigations, meeting deadlines, reflecting on learning. **Communication Skills** Presenting graphs and scientific reports, explaining particle behaviour using diagrams and symbols, participating in discussions and debates. **Social Skills - Collaboration** Group particle modelling activities, collaborative experiments, peer discussions, and group investigations.	**Materials & Their structure** - Solids, liquids & gases - Changes of state - Explaining changes of state - Atoms, elements & the periodic table - Compounds & formulae - Compounds & mixtures
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Relationships**		
Related concepts	**Form** **Structure** **Transformation**		
Global context	**Scientific & Technical Innovation** The ways people understand the natural world and use materials to improve life.		
Statement of inquiry	The **relationships** between the **structure**, **form**, and **transformation** of matter explain how materials behave and how humans use them to develop technologies.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 6 (MYP 1)

6

20 hours		ATL Skills	Content
Unit Title (3)	Acids & Alkalis Neutralization Reaction	**Thinking Skills: Critical Thinking** Classifying substances using pH values, interpreting experimental data, identifying patterns in neutralization reactions, drawing evidence-based conclusions, explaining cause-and-effect relationships. **Thinking Skills – Creative Thinking** Generating hypotheses, brainstorming ideas about chemicals and safety, using diagrams and inquiry questions, designing investigation approaches. **Research Skills – Information literacy** Collecting and recording accurate experimental data, organizing results in tables, analysing pH data, identifying relevant scientific information from resources. **Communication Skills** Presenting scientific findings using tables, charts, diagrams, and reports, explaining neutralization reactions using scientific vocabulary, participating in discussions and investigations. **Self-management Skills – organization** Following laboratory safety rules, managing time during investigations, completing investigation plans systematically, working responsibly with scientific equipment. **Social Skills – Collaboration** Working in mixed-ability groups, peer assessment, collaborative laboratory investigations, sharing scientific ideas during discussions.	**Acids & Alkalis** - Acids & alkalis. - Indicators & the pH scale. - Neutralization. - Investigating acids & alkalis.
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Relationships**		
Related concepts	**Change** **Interactions** **Energy**		
Global context	**Scientific & Technical Innovation** Understanding how science is used to solve real-life problems		
Statement of inquiry	Understanding the **relationship** between acids and bases allows us to investigate chemical **interactions** and solve real-life problems through neutralisation.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 6 (MYP 1)

6

20 hours		ATL Skills	Content
Unit Title (4)	**Microorganism**	**Thinking Skills: Critical Thinking** Classifying organisms using observable characteristics, identifying ecosystem patterns, analysing beneficial and harmful effects of microorganisms, interpreting investigation data, drawing evidence-based conclusions, predicting ecosystem changes. **Thinking Skills – Creative Thinking** Generating hypotheses, brainstorming classification systems, creating food chains and microorganism posters, asking “what if” questions, developing scientific inquiry ideas. **Research Skills – Information literacy** Collecting and recording observational data, organizing scientific information, distinguishing reliable scientific sources, summarizing information from texts and videos, creating reports and presentations using evidence. **Self-management Skills – Organization** Following practical safety rules, organizing notes and worksheets, managing project work, responding to teacher feedback, and using lab equipment responsibly. **Communication Skills** Using scientific vocabulary accurately, presenting information through posters, diagrams, tables, and digital presentations, explaining scientific processes clearly, communicating investigation findings in reports and discussions. **Social Skills – Collaboration** Working in groups during classification and food web activities, peer assessment, participating in discussions and collaborative investigations.	**Microorganisms** - Characteristics of micro-organism - Viruses. - Microorganisms - Food chains and food web. - Microorganisms and decay.
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Relationships**		
Related concepts	**Classification** **Patterns** **Interaction**		
Global context	**Scientific & Technical Innovation** Using scientific classification systems to understand the living world.		
Statement of inquiry	Understanding **patterns** and **relationships** between organisms helps us **classify** living things & understand how microorganisms impact the environment & human life.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 7 (MYP 2)

7

20 hours		ATL Skills	Content
Unit Title (1)	**Respiration**	**Thinking skills – Critical Thinking** Interpreting breathing-rate data, comparing aerobic and anaerobic respiration, analysing gas exchange and diffusion, making scientifically supported conclusions, connecting respiratory and circulatory system interactions. **Thinking Skills – Transfer** Applying knowledge to new contexts such as exercise, smoking effects, respiratory diseases, and real-life health decisions. **Research Skills – Information literacy** Research into smoking effects and respiratory diseases, evaluating sources, collecting and recording breathing-rate data, analysing investigation results **Communication Skills** Using scientific terminology accurately, presenting respiratory system models, organizing scientific explanations, participating in debates and peer review, explaining diffusion and respiration processes clearly **Social Skills – Collaboration** Working collaboratively during investigations, peer-reviewing projects, engaging in debates about smoking and public health, conducting group experiments. **Self-management – Organization** Planning investigations, meeting deadlines, managing project tasks, organizing scientific reports and models, completing inquiry activities independently.	**Respiration** - The human respiratory system - Gas exchange - Aerobic respiration
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Systems**		
Related concepts	**Function** **Interaction** **Transformation** **Energy**		
Global context	**Identities & Relationships**		
Statement of inquiry	**Interactions** within body **systems** enable **energy transformation** and gas exchange, shaping human health and lifestyle choices.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 7 (MYP 2)

7

20 hours		ATL Skills	Content
Unit Title (2)	**Force & Energy**	**Thinking Skills – Critical Thinking** Interpreting diffusion data, analysing pressure calculations, evaluating scientific investigations, drawing conclusions from graphs, exploring particle movement & energy transfer, formulating inquiry questions. **Thinking Skills – Transfer Skills** Applying scientific knowledge to unfamiliar situations, connecting physics concepts to engineering and real-world systems, combining knowledge and skills to design investigations and solutions. **Research Skills – Information literacy** Collecting, recording, & verifying experimental data, processing & presenting results, conducting diffusion experiments, researching pressure applications in engineering systems, creating graphs and interpreting data. **Self-management Skills – Reflection** Considering ethical and environmental implications of engineering applications and pressure systems. **Self-management Skills – Organization** Planning investigations, preparing for assessments, organizing scientific notebooks and reports, managing long- and short-term assignments. **Communication Skills** Explaining scientific ideas using appropriate language, structuring reports and summaries, discussing scientific concepts in teams, presenting investigation findings clearly. **Social Skills – Collaboration** Participating in group investigations.	**Forces and Energy** • Introduction to force and energy. • Types of forces (push, pull, gravity, friction). **Pressure Between Solids** • Definition of pressure. • Formula: P = F ÷ A. • Practical investigations. • Real-life examples (sharp tools, footwear). **Pressure in Liquids & Gases** • Pressure increases with depth. • Pressure acts in all directions. • Demonstrations using water bottles and balloons. **Particles on the Move** • Particle models of solids, liquids, and gases. • Relationship between temperature and particle speed. **Diffusion** • Definition and explanation using particle theory. • Experiments: food coloring in hot vs cold water. - Everyday examples of diffusion.
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Change**		
Related concepts	**Energy** **Movement** **Interaction**		
Global context	**Identities & Relationships** how humans use their understanding of circulatory system & relating it to the leading cause of death CHD.		
Statement of inquiry	**Interactions** between forces & particles cause **changes** in **energy** & **movement**, influencing how systems behave in everyday & technological contexts.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 7 (MYP 2)

7

20 hours		ATL Skills	Content
Unit Title (3)	**Chemical Reaction**	**Thinking Skills – Critical Thinking** Interpreting experimental observations, analysing evidence of chemical change, comparing reaction types, identifying patterns in reactivity, predicting reaction outcomes, explaining differences in reaction vigor. **Thinking Skills – Transfer** Applying knowledge about chemical reactions to unfamiliar contexts, connecting reactivity to real-world applications and safety considerations. **Research Skills – Information literacy** Accessing and evaluating scientific information, researching elements and their properties, collecting and recording experimental data, investigating real-life applications and risks of chemical reactions. **Communication Skills** Organizing scientific information clearly, using scientific terminology accurately, presenting findings about elements and reactions, explaining observations and energy changes effectively. **Social Skills - Collaboration** Conducting group investigations on reaction types, sharing observations, giving and receiving feedback, respecting others' viewpoints during collaborative inquiry activities. **Self-management – Organization** Managing research tasks, completing investigations systematically, organizing experimental observations and reports, preparing presentations for Criterion D tasks.	**Chemical Reaction** - Exothermic reactions - Endothermic reactions - Reactions of metals with oxygen - Reactions of metals with water - Reactions of metals with acids
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Energy** **Reactivity** **Transformation**		
Global context	**Scientific & Technical Innovation**		
Statement of inquiry	Students explore how chemical reactions are used to produce **energy**, materials, and technologies, & how understanding reactions helps us manage safety & resources.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 7 (MYP 2)

7

20 hours		ATL Skills	Content
Unit Title (4)	**Properties of Materials**	**Thinking Skills – Critical Thinking** Drawing reasonable conclusions and generalizations, interpreting experimental data, analysing separation methods and solubility results, evaluating investigation outcomes using scientific reasoning **Thinking Skills – Creative Thinking** Making guesses and generating testable hypotheses, applying existing knowledge to generate new ideas and processes, using brainstorming and mind mapping to generate inquiries and solutions related to mixtures and separation techniques. **Research Skills – Information literacy** Creating references and citations, researching elements, collecting & analysing information about substances and their properties, processing & reporting investigation data. **Communication Skills** Explaining scientific ideas clearly during investigations, presenting flowcharts and scientific findings, discussing separation methods and inquiry results using scientific terminology appropriately **Social Skills - Collaboration** Working collaboratively during group investigations, participating in peer assessment, changing group roles during activities, and supporting classmates through inquiry-based learning tasks **Self-management – Organization** Planning and carrying out investigations systematically, organizing separation processes using flowcharts, managing laboratory investigations and worksheets effectively. **Self-management Skills – Reflection** Reflecting on investigation methods, evaluating which separation techniques worked best, considering improvements to increase purity & effectiveness of separation methods.	**Properties of Materials** - Dissolving - Mixtures - Solutions and solubility - Planning a solubility investigation - Chromatography
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Systems**		
Related concepts	**Model** **Transfer**		
Global context	**Scientific & Technical Innovation**		
Statement of inquiry	The interactions between substances in mixtures and solutions can be **modelled** and investigated to develop scientific and technical innovations that improve daily life.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 8 (MYP 3)

8

20 hours		ATL Skills	Content
Unit Title (1)	Photosynthesis & The Carbon Cycle	**Thinking Skills – Critical Thinking** Drawing conclusions about photosynthesis and the carbon cycle, analysing climate change impacts, interpreting carbon cycle diagrams, analysing leaf structure and function. **Thinking Skills – Creative Thinking** Applying prior knowledge to generate new ideas and products such as climate change posters, leaf models, botanical book designs, and sustainability projects. **Thinking Skills – Transfer Skills** Applying scientific understanding to unfamiliar environmental and climate-related situations, linking photosynthesis to sustainability and global challenges. **Research Skills – Information literacy** Collecting, recording, and verifying data, analysing climate change data, researching native Palestinian plants, investigating carbon cycle imbalance, gathering evidence from experiments and sustainability research. **Self-management – Organization** Planning investigations, preparing for quizzes and long-term projects, organizing notebooks and files, managing assignments and deadlines systematically. **Communication Skills** Structuring information in reports and summaries, presenting information using diagrams, models, posters, bar charts, and presentations, communicating sustainability solutions effectively. **Social Skills – Collaboration** Working in groups during investigations and projects, discussions and debates.	**Photosynthesis** - Photosynthesis is a biological process and a reaction with reactants and products. - The parts of the internal structure of a leaf. - The relationship between structure and function of living cells in a leaf. - The role of the carbon cycle in maintaining ecosystem balance. - The key processes involved in the carbon cycle. - Human activities and their impact on the carbon cycle. - Sustainable solutions can be found to counteract climate change.
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Systems**		
Related concepts	**Environment** **Balance** **Function** **Interactions**		
Global context	**Globalization & Sustainability** Students will explore how plants function within the carbon cycle system & interact with their surroundings, affecting climate change.		
Statement of inquiry	Understanding how energy is transformed, & carbon is cycled through **ecosystems** allows us to appreciate the interdependence of organisms & develop **sustainable** solutions for global challenges.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 8 (MYP 3)

8

20 hours		ATL Skills	Content
Unit Title (2)	**Properties of materials**	**Thinking Skills – Critical Thinking** Drawing conclusions about atomic structure and chemical behaviour, analysing periodic table trends, predicting charges of elements, differentiating between ionic and covalent compounds, interpreting conductivity demonstrations **Thinking Skills – Creative Thinking** Applying existing knowledge to create products such as periodic table element cards and atomic models, using creative approaches to represent chemical structures. **Thinking Skills – Transfer** Applying knowledge of atomic structure and bonding to unfamiliar situations and real-world material behaviour. **Research Skills - Information literacy** Collecting, recording, and verifying data while researching assigned elements, analysing periodic table information, using simulations and scientific resources effectively. **Self-management – Organization** Planning long- and short-term assignments, organizing science notebooks and files, taking effective notes, preparing for quizzes and summative assessments systematically. **Communication** Structuring information in reports and summaries, presenting information using diagrams, graphs, models, and drawings, communicating scientific understanding visually and verbally. **Social Skills – Collaboration** Working in groups during investigations and activities	**Properties of Materials** - Constructing atomic Bohr models for the first 20 elements of the periodic table. - Analyzing trends and properties in the periodic table for groups 1, 7 and 8. - Relating the chemical behaviour of elements to their atomic structure. - Predicting the charge of elements. - Using a mnemonic to remember diatomic molecules. - Differentiating between ionic and covalent compounds in terms of bonding and properties. - Drawing dot and cross diagrams for covalent compounds.
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Relationships**		
Related concepts	**Models** **Patterns** **Interaction**		
Global context	**Scientific & Technical Innovation**		
Statement of inquiry	Understanding atomic structure and the formation of ions allows us to **model** and predict chemical behaviour, which supports **innovations** in materials and **technologies**.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 8 (MYP 3)

8

20 hours		ATL Skills	Content
Unit Title (3)	**Forces & Energy**	**Thinking Skills – Critical Thinking** Drawing conclusions about density and energy relationships, interpreting graphs and Sankey diagrams, analysing experimental data, evaluating efficiency and heat transfer, making informed scientific decisions. **Thinking Skills – Creative Thinking** Applying existing knowledge to design investigations, generate experimental setups, and create solutions related to energy and density problems. **Thinking Skills – Transfer** Applying scientific understanding to unfamiliar real-world situations involving density, energy transfer, and energy transformation. **Research Skills – Information literacy** Collecting, recording, and verifying data, presenting information as graphs and drawings, analysing experimental results from density and heat-transfer investigations. **Communication Skills** Structuring scientific reports and summaries, interpreting and creating diagrams, Sankey diagrams, bar charts, graphs, and presenting processed data clearly. **Self-management – Organization** Planning short- and long-term assignments, organizing science notebooks and reports, taking effective notes, preparing systematically for assessments and investigations. **Social Skills – Collaboration** Working collaboratively during lab.	**Forces & Energy** - Physical quantities: Density, Mass, Volume, energy, temperature. - Physical processes: transformation, transfer, energy dissipation, evaporation and boiling. - Application of the water displacement method in laboratory work as well as its history. - Calculating efficiency of a system. - A review of some common laboratory instruments like the measuring cylinder, thermometer and digital balance.
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Change**		
Related concepts	**Energy** **Models** **Transformation**		
Global context	**Scientific & Technical Innovation** How humans use scientific principles to create things that serve them & help them understand the physical world		
Statement of inquiry	Understanding how the density of materials impacts their behaviour & how **energy changes** form helps us **innovate** & engineer solutions in the real world.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 8 (MYP 3)

8

20 hours		ATL Skills	Content
Unit Title (4)	**Maintaining Life**	**Thinking Skills – Critical Thinking** Drawing conclusions about homeostasis and body systems, analysing the effects of smoking and drugs on fetal development, making scientifically supported judgments about health behaviour. **Thinking Skills – Creative Thinking** Applying scientific understanding to create health-awareness leaflets, generating new ways to communicate health information. **Thinking Skills – Transfer** Applying knowledge about excretion, pregnancy health, and harmful substances to unfamiliar real-life situations and decision-making contexts. **Self-management – Organization** Planning long- and short-term assignments, organizing notebooks and science files, taking effective notes, preparing for assessments and projects systematically. **Research Skills – Information literacy** Researching human-health topics, gathering information about smoking, pregnancy, kidney disease, and vitamin deficiency, documenting sources and scientific information accurately. **Communication Skills** Designing informative leaflets, communicating scientific ideas clearly, presenting health information visually and verbally, applying scientific language effectively. **Social Skills – Collaboration** Participating in group activities, collaborative worksheet tasks.	**Maintaining Life** - The components of the excretory system and their role in maintaining internal balance in the human body. - The nutrients needed for a pregnant mother and behaviour to be followed for maintaining a healthy fetus. - The negative impact of smoking and unprescribed drugs on fetal development
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Systems**		
Related concepts	**Function** **Development**		
Global context	**Scientific & Technical Innovation** How Scientific understanding of biological systems helps humans maintain health & develop medical technologies		
Statement of inquiry	Understanding how biological **systems** maintain internal balance and support **development** allows us to protect our health and innovate in the field of medicine		

20 hours		ATL Skills	Content
Unit Title (5)	**Rearranging Atoms**	**Thinking Skills – Critical Thinking** Drawing conclusions about chemical reactions, predicting reaction patterns, analysing displacement reactions and conservation of mass, interpreting reactivity trends, and evaluating evidence from investigations. **Thinking Skills – Creative Thinking** Applying scientific knowledge to generate new ideas, creating mnemonics for the reactivity series, designing experimental investigations, modelling reactions and chemical processes. **Thinking Skills – Transfer** Applying knowledge of reactivity, formulas, and balancing equations to unfamiliar situations and predicting products of reactions. **Self-management – Organization** Planning short- and long-term assignments, organizing notebooks and lab reports, taking effective notes, preparing systematically for quizzes and assessments. **Research Skills – Information Literacy** Collecting, recording, verifying, and analysing experimental data, processing results, presenting information using tables and drawings, designing scientific investigations **Communication** Structuring scientific reports and summaries, using diagrams and visual communication tools, clearly representing experimental setups and methods, explaining chemical equations and reactions accurately. **Social Skills – Collaboration** Working in groups during investigations and lab work.	**Rearranging Atoms** - Chemical reactions: displacement and salt forming reactions. - Predicting reaction products based on the reactivity series. - Analysing real-life applications of reactivity. - Writing chemical formulas for ionic compounds. - Using four polyatomic ions in writing formulas - Balancing chemical equations. - Describing the law of conservation of mass with examples. - Analysing cases where the law of conservation of mass appears to be violated.
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing**		
Key concept	**Change**		
Related concepts	**Form** **Patterns**		
Global context	**Scientific & Technical Innovation** understanding chemical reactions for development of technologies, medicines, materials & sustainable solutions		
Statement of inquiry	Chemical **changes** follow predictable **patterns** that help us **model** reactions, predict reactivity, and create useful substances.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 8 (MYP 3)

8

8 hours		ATL Skills	Content
Unit Title (6)	**Sound & Space**	**Thinking Skills – Critical Thinking** Drawing conclusions and generalizations about sound-wave behaviour, analysing waveforms, interpreting relationships between frequency, wavelength, amplitude, pitch, and loudness, evaluating interference patterns and sound-energy changes. **Thinking Skills – Creative Thinking** Applying existing knowledge to generate new products and processes such as informative sound-scale diagrams, modelling wave behaviour, and proposing experiment improvements. **Thinking Skills – Transfer** Applying skills and knowledge in unfamiliar situations through analysing real-life applications of sound waves, technological innovations such as noise-cancelling headphones **Self-management – Organization** Planning short- and long-term assignments, maintaining organized notebooks and science folders, taking effective notes. **Research Skills – Information Literacy** Collecting, recording, and verifying sound data, presenting information using graphs and diagrams, measuring sound with decibel meter apps, analysing experimental trends, interpreting graphs scientifically. **Communication** Structuring information in summaries, essays, reports, and diagrams, using communication tools such as models and graphs, presenting scientific findings clearly using visual and written formats. **Social Skills – Collaboration** Working collaboratively during formative worksheets, laboratory investigations, peer assessment, sound experiments.	**Sound & Space** - Describe sound waves. - Interpret a waveform featuring different properties of a wave (amplitude, frequency and wavelength) - Deduce the relationship between frequency and pitch as well as loudness and amplitude. - Differentiate between constructive and destructive interference in sound waves. - Explore real-life applications and phenomenon relating to wave behaviour.
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Relationships**		
Related concepts	**Form** **Energy** **Interaction**		
Global context	**Scientific & Technical Innovation** How humans use understanding of waves & interference to develop technologies. (Ex: noise cancelling headphones		
Statement of inquiry	Understanding the **form** and **interactions** of sound waves allows us to model and put wave behavior to use leading to innovation in technology and communication.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences
Grade 8 (MYP 3)

8

15 hours		ATL Skills	Content
Unit Title (7)	**Genes & Inheritance**	**Thinking Skills – Critical Thinking** Drawing reasonable conclusions about inheritance, variation, & natural selection, analysing genetic information, interpreting karyotypes, evaluating survival & adaptation patterns, & making scientifically supported judgments about genetics & evolution. **Thinking Skills – Creative Thinking** Applying existing knowledge to generate new ideas and processes related to inheritance patterns, variation studies & real-life adaptation examples. **Thinking Skills – Transfer** Applying skills & knowledge in unfamiliar situations through analysing real-life genetic variation, environmental influences, adaptation, & natural-selection case studies such as antibiotic resistance & the peppered moth. **Self-management – Organization** Planning short- & long-term assignments, organizing notebooks & files, taking effective notes, preparing for exams & investigations systematically. **Research Skills – Information Literacy** Collecting, recording, verifying, & analysing data, measuring variation in human height, constructing frequency diagrams and bar charts, researching genetically modified organisms, & making informed decisions based on scientific information. **Communication** Structuring information in summaries and reports, using diagrams, bar charts, and frequency diagrams effectively, communicating scientific findings visually and verbally during group investigations and worksheets **Social Skills – Collaboration** Working collaboratively during group investigations, worksheet completion, variation measurements, and scientific discussions about genetics and evolution.	**Genes & Inheritance** - Differentiate between chromosomes, genes and DNA. - Analyse a karyotype and its uses in Biology. - Differentiate between sperm and egg cells in terms of structure and function. - Describe fertilization. - Understand sex inheritance in humans and how gender is determined. - Describe variation due to genetics or the environment or both using real life examples.
MYP Objectives	**A – Knowing & Understanding** **C – Processing & Evaluating**		
Key concept	**Relationships**		
Related concepts	**Form** **Function** **Patterns**		
Global context	**Scientific & Technical Innovation** How humans use understanding of waves & interference to develop technologies. (Ex: noise cancelling headphones		
Statement of inquiry	Understanding how genetic information is inherited & expressed allows us to explain variation among organisms & how species change over time. The genetic identity shows a relationship between models & patterns		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Biology
Grade 9 (MYP 4)

9

20 hours		ATL Skills	Content
Unit Title (1)	Patterns of Life: From Cells to Classification	**Thinking Skills – Creative Thinking** Applying existing knowledge to generate new ideas about classification systems, biological relationships, and the role of viruses in defining life. Students analyse and debate biotechnology and artificial life concepts. **Thinking Skills – Transfer** Applying scientific knowledge in unfamiliar situations through analysing pathogens, classification systems, stem cells, artificial life, and genome mapping in relation to human health. **Self-management – Reflection** Considering ethical, cultural, and environmental implications of scientific developments such as stem cells, artificial life, genome mapping, and the classification of viruses. **Research Skills – Information Literacy** Evaluating and selecting information sources, identifying primary and secondary sources, creating references and citations, conducting research on viruses and biological classification, using genome mapping evidence. **Research Skills – Media literacy** Seeking a range of perspectives from varied scientific sources regarding classification, viruses, biodiversity, and biotechnology. **Communication Skills** Taking effective notes, previewing and skimming scientific texts, structuring information in summaries and essays, communicating using scientific language, presentations, reports, diagrams, and multiple media formats. **Social Skills – Collaboration** Working collaboratively during laboratory investigations and inquiry discussions related to biodiversity and human health.	**Classification:** - Characteristics of living things - Classification - The kingdoms of living organisms - Viruses - Classifying animals - Classifying plants - Keys **Cells** - Cell structure - Cells and organisms
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Relationships**		
Related concepts	**Patterns** **Function**		
Global context	**Identities & Relationships** Students will explore how identifying & classifying different living organisms are essential for humans' health		
Statement of inquiry	Identifying **patterns** in biological **functions** allows us to understand the complex **relationships** within life's organization, impacting how we manage human health.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Biology
Grade 9 (MYP 4)

9

40 hours		ATL Skills	Content
Unit Title (2)	Processes & Molecules that Support Life	**Thinking Skills – Creative Thinking** Generating hypotheses, brainstorming scientific ideas, designing investigations, creating novel solutions to biological problems, and using visual diagrams to support understanding of cellular and biochemical processes. **Thinking Skills – Critical Thinking** Analysing diffusion, osmosis, active transport, enzyme activity, photosynthesis, and transport systems; evaluating evidence and arguments from investigations; interpreting scientific data and proposing improvements to methods. **Thinking Skills – Transfer** Applying knowledge and skills in unfamiliar contexts such as biotechnology, enzyme applications, transport systems, diffusion investigations, and real-life biological challenges. **Social Skills – Collaboration** Working collaboratively during laboratory investigations, inquiry tasks, and experimental activities related to diffusion, enzymes, and photosynthesis. **Self-management – Reflection** Reflecting on ethical, cultural, & environmental implications of biotechnology, enzyme manipulation, & biochemical applications in agriculture & medicine. **Research Skills – Information Literacy** Processing and reporting scientific data, evaluating information sources, identifying primary and secondary sources, constructing bibliographies and citations, researching biological molecules and related diseases. **Research Skills – Media Literacy** Seeking multiple scientific perspectives regarding biotechnology, biological molecules, and biochemical manipulation in agriculture and medicine. **Communication Skills** Structuring information in essays, reports, investigations, presentations, & posters; presenting data in multiple formats; using scientific language effectively with different audiences.	**Movement in and out of cells:** - Diffusion - Osmosis - Active transport **Biological molecules** - Carbohydrates, Fats and proteins - The structure of DNA **Enzymes** - Biological Catalysts - Factors that affect enzymes **Plant nutrition** - Making Carbohydrates using light energy - Leaves - Factors affecting photosynthesis **Transport in plants** - Xylem and phloem - Transport of Water - Translocation of sucrose and amino acids
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Systems**		
Related concepts	**Movement** **Energy** **Transformation**		
Global context	**Scientific & Technical Innovation** How tools and techniques help us measure, model, and manipulate cellular processes to meet food, energy, and health needs.		
Statement of inquiry	In living **systems**, the **movement** of substances, the structure of biological molecules, enzyme-controlled reactions, & **energy transformations** in plants interact to sustain life, & innovation lets us analyse & apply these processes.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Biology
Grade 9 (MYP 4)

9

15 hours		ATL Skills	Content
Unit Title (3)	**The Fragile Balance**	**Thinking Skills – Creative thinking** Applying prior knowledge to generate new ideas, brainstorming ecological solutions, using diagrams and inquiry strategies to explore ecosystem balance and sustainability. **Thinking Skills – Critical thinking** Analysing complex ecological systems, interpreting food webs and nutrient cycles, evaluating scientific evidence, analysing trophic cascades and environmental disruption caused by humans. **Thinking skills – Transfer** Applying ecological knowledge and scientific reasoning in unfamiliar contexts such as eutrophication, pollution, habitat destruction, invasive species, and sustainability challenges. **Self-management – Reflection** Reflecting on ethical, cultural, and environmental implications of human actions on ecosystems and sustainability. **Research Skills – Information Literacy** Evaluating and selecting reliable scientific sources, identifying primary and secondary sources, documenting references and citations, using scientific data and evidence appropriately. **Research Skills – Media Literacy** Seeking multiple perspectives from varied scientific and environmental sources regarding pollution, global warming, habitat destruction, and sustainability. **Communication Skills** Taking effective notes, making study notes, previewing and skimming texts, structuring information in reports and essays, using scientific language effectively, communicating with different audiences using multiple media formats. **Social Skills – Collaboration** Group investigations, collaborative lab work, changing group roles, & cooperative inquiry-based learning activities.	**Organisms & their environment:** - Ecology - Energy flow - Nutrient cycle **Humans & their environment:** - Habitat destruction - Pollution
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Balance** **Environment**		
Global context	**Globalization & Sustainability** Students will explore the impact of humans on the environment.		
Statement of inquiry	The **sustainability** of biological **environments** relies on a delicate **balance** of interactions, which can be fundamentally **changed** by human intervention & global consumption patterns.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Chemistry
Grade 9 (MYP 4)

9

25 hours		ATL Skills	Content
Unit Title (1)	Atomic Structure & The Periodic Table	**Thinking skills – Critical Thinking** Analysing atomic models and periodic trends, interpreting relationships between atomic structure and element classification, interpreting isotope data, evaluating scientific models and periodic patterns. **Thinking Skills – Transfer** Applying scientific reasoning to electron configurations and isotope analysis, applying knowledge to unfamiliar scientific problems, connecting atomic science to medicine, technology, and industry. **Social skills – Collaboration** Collaborating during inquiry activities and discussions, participating actively in collaborative learning, providing constructive peer feedback during investigations and group tasks. **Communication skills** Using scientific terminology accurately, presenting electron configurations and scientific explanations clearly, communicating scientific conclusions effectively in written and oral forms. **Self-management skills – Organization** Organizing notes, calculations, and scientific information effectively, planning assignments, managing time during investigations and learning activities. **Research skills – Information literacy** Investigating scientific developments related to atomic theory and isotopes, accessing information to inform inquiry & scientific understanding. **Research Skills – Media Literacy** Evaluating scientific information from multiple sources and seeking a range of scientific perspectives	**Atomic Structure & The Periodic Table** - Introduction to atoms - Development of atomic theory - Isotopes - Classification of elements - Periodic trends - Compounds and mixtures - Electron configuration
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Relationships**		
Related concepts	**Models** **Patterns**		
Global context	**Scientific & Technical Innovation** Explore the discoveries & scientific development that shape understanding of matter		
Statement of inquiry	**Scientific models** & **patterns** in atomic structure help explain the organization, properties, & classification of elements in the periodic table.		

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MYP Subject Overview
Sciences – Chemistry
Grade 9 (MYP 4)

9

22 hours		ATL Skills	Content
Unit Title (2)	**Chemical Bonding**	**Thinking skills – Critical Thinking** Analysing relationships between bonding and material properties, interpreting bonding models and particle interactions, analysing structure–property relationships, evaluating bonding models. **Thinking Skills – Transfer Skills** Applying scientific reasoning to bonding problems, structure analysis, conductivity, solubility, melting behaviour, and real-world material applications. **Social skills – Collaboration** Collaborating during investigations, participating actively in inquiry-based learning activities. **Communication skills:** Using scientific terminology accurately, presenting Lewis structures and scientific explanations clearly, communicating scientific conclusions effectively in written and oral forms**.** **Self-management skills – Organization** Organizing notes, diagrams, and scientific information effectively, managing time during investigations and assignments, planning and completing inquiry tasks responsibly. Following laboratory safety procedures responsibly during conductivity, solubility, and bonding investigations. **Research skills – Information Literacy** Investigating applications of ionic and covalent substances, evaluating scientific information related to bonding and material science, collecting and analysing investigation data. **Research Skills – Media literacy** Connecting bonding concepts to technological and industrial applications and evaluating scientific resources, simulations, and case studies related to materials science.	**Chemical Bonding** - Introduction to chemical bonding - Ions - Ionic bonding - Covalent bonding - Lewis structures - Giant structures - Structure and properties
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Relationships**		
Related concepts	**Interaction Models**		
Global context	**Scientific & Technical Innovation** Explore the understanding of materials & their applications through scientific models		
Statement of inquiry	**Interactions** between particles determine bonding structures & influence the properties & applications of chemical substances.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Chemistry
Grade 9 (MYP 4)

9

20 hours		ATL Skills	Content
Unit Title (3)	**Chemical Formula & Equations**	**Thinking skills – Critical Thinking** Analysing relationships between reactants and products, interpreting chemical equations and symbolic models, analysing reaction patterns, balancing equations, and interpreting scientific data. **Thinking Skills – Transfer** Applying scientific reasoning to calculations and reaction analysis, applying skills in unfamiliar situations, connecting chemical models to real-world and industrial applications. **Social skills – Collaboration** Collaborating during investigations and discussions, giving and receiving meaningful feedback, participating actively in inquiry-based learning activities, and working responsibly during laboratory tasks **Communication skills** Using scientific terminology accurately when writing formulas and equations, presenting calculations and symbolic representations clearly, organizing information logically, and communicating scientific conclusions effectively in written and oral formats. **Self-management skills – Organization** Organizing calculations, notes, and laboratory data effectively, keeping organized notebooks, planning assignments, meeting deadlines, and managing time during investigations **Research skills – Information literacy** Investigating applications of chemical equations in science and industry, evaluating scientific information related to chemical processes, collecting and analysing laboratory data. **Research Skills – Media Literacy** Seeking perspectives from varied scientific sources and evaluating symbolic models, simulations, and scientific resources related to chemistry processes.	**Chemical Formula & Equations** - Chemical names & formulas - Relative masses - Chemical equations - State symbols - Ionic equations - Types of reactions
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Relationships**		
Related concepts	**Interaction Models**		
Global context	**Scientific & Technical Innovation** Explore the scientific communication and representation of chemical processes		
Statement of inquiry	Scientific **models** & symbolic **representations** help explain chemical **interactions** & predict quantitative **relationships** in chemical reactions.		

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MYP Subject Overview
Sciences – Chemistry
Grade 9 (MYP 4)

9

24 hours		ATL Skills	Content
Unit Title (4)	Redox Reactions	**Thinking skills – Critical Thinking** Analysing relationships between reactants and products, interpreting oxidation numbers and symbolic models, analysing electron transfer, evaluating combustion and environmental impacts, interpreting color changes in redox reactions. **Thinking Skills – Transfer** Applying scientific reasoning to oxidation-number calculations and reaction analysis, applying redox concepts in unfamiliar situations, connecting redox chemistry to industrial, environmental, and technological applications. **Social skills – Collaboration** Collaborating during investigations and discussions, providing constructive peer feedback, participating actively in inquiry-based learning activities, and working responsibly during laboratory experiments. **Communication skills** Using scientific terminology accurately when explaining oxidation and reduction, presenting calculations and symbolic representations clearly, organizing scientific information logically, and communicating scientific conclusions effectively in written and oral formats. **Self-management skills – Organization** Organizing calculations, notes, and laboratory observations effectively, planning assignments and investigations, managing time during experiments & inquiry activities. **Research skills – Information literacy** Investigating industrial and environmental applications of redox chemistry, evaluating scientific information related to combustion and pollution, collecting and analysing laboratory data	**Redox Reactions** - Introduction to redox reactions - Combustion reactions - Oxidation numbers - Half-equations - Oxidising and reducing agents - Colour changes in redox reactions - Transition metals in redox chemistry - Industrial and environmental applications
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Transfer** **Interaction**		
Global context	**Scientific & Technical Innovation** Explore industrial processes, environmental systems, & chemical technologies		
Statement of inquiry	Electron **transfer** & **changes** in oxidation states explain chemical transformations & influence industrial, environmental, & technological processes.		

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MYP Subject Overview
Sciences – Chemistry
Grade 9 (MYP 4)

9

24 hours		ATL Skills	Content
Unit Title (5)	**Stoichiometry**	**Thinking skills – Critical Thinking** Analysing relationships between reactants and products, interpreting stoichiometric relationships, analysing limiting reactants & percentage yield, interpreting chemical equations and symbolic models, evaluating industrial efficiency & waste reduction. **Thinking Skills – Transfer** Applying scientific reasoning to stoichiometric calculations & quantitative analysis, applying knowledge in unfamiliar situations, connecting chemical calculations to industrial, environmental, and medical applications. **Social skills – Collaboration** Collaborating during investigations and discussions, participating actively in inquiry-based learning activities, providing constructive peer feedback, & working responsibly during laboratory investigations. **Communication skills** Using scientific terminology accurately when explaining calculations & equations, presenting calculations and symbolic representations clearly, organizing scientific information logically, & communicating scientific conclusions effectively in written & oral forms **Self-management skills – Organization** Organizing calculations, notes, & laboratory data effectively, planning short- and long-term assignments, managing time during investigations & quantitative problem-solving activities **Research skills – Information literacy** Investigating applications of chemical calculations in industry and science, evaluating scientific information related to quantitative chemistry and industrial efficiency, analysing scientific articles and case studies.	**Stoichiometry** - Mole concept - Relative masses - Stoichiometry - Limiting & excess reactants - Percentage calculations - Gas calculations - Concentration calculations - Industrial & environmental applications
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Relationships**		
Related concepts	**Quantity** **Models**		
Global context	**Scientific & Technical Innovation** Explore using scientific models & calculations to solve real-world problems		
Statement of inquiry	**Quantitative relationships** in chemical reactions allow scientists to predict, evaluate, and improve the efficiency of laboratory & industrial processes.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Physics
Grade 9 (MYP 4)

9

10 hours		ATL Skills	Content
Unit Title (1)	**Units & Measurements**	**Research Skills – Information literacy** Finding, interpreting, judging, and creating information, collecting and verifying data, conducting investigations about SI systems and uncertainty, analysing flawed data sets. **Research Skills – Media Literacy** Investigating the history and development of SI units using videos, simulations, and case studies, evaluating scientific information from different sources. **Social Skills – Collaboration** Collaborating during practical investigations and worksheet activities, practicing giving feedback on experimental methods, participating in peer-review discussions and group investigations. **Self-management Skills – Organization** Using step-by-step investigation planning templates, structuring laboratory reports appropriately, managing time during practical work, data collection, and written exams. **Thinking Skill – Critical Thinking** Interpreting data gained from investigations, analysing and evaluating issues and ideas, comparing "good vs bad data," evaluating reliability and uncertainty, drawing reasonable conclusions and generalizations. **Thinking Skills – Creative Thinking** Applying scientific understanding creatively to solve real-world measurement problems, designing investigations related to density and uncertainty, and exploring patterns in measurement systems. **Communication Skills** Exchanging scientific ideas effectively, using scientific language and terminology accurately, constructing data tables and graphs, structuring summaries, essays, and reports logically.	**Units & Measurements** **Measurement Systems** - Fundamental SI units and derived units - Global standardization **Reliability of Data** - Accuracy and precision - Measurements and Uncertainty - The nature of random and systematic errors **Applications** - Density - Real-world measurement problems
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Systems**		
Related concepts	**Patterns** **Change**		
Global context	**Globalization & Sustainability** adaptation, ingenuity & progress		
Statement of inquiry	Measurement **systems** help us understand the world more accurately by showing **patterns** and **changes** to improve over time, allowing scientists everywhere to share and compare data reliably.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Physics
Grade 9 (MYP 4)

9

20 hours		ATL Skills	Content
Unit Title (2)	Forces & Motion (Kinematics)	**Research Skills – Information literacy** Finding & selecting relevant sources about transportation & car safety, comparing scientific evidence from multiple sources, collecting & analysing motion data. **Research Skills – Media literacy** Analysing crash-test videos, braking-test videos, road-safety campaigns, & scientific reports to evaluate how scientific evidence informs safety decisions. **Social skills - Collaboration** Collaborating during practical investigations, sharing responsibility in group tasks, classroom debates, giving & receiving constructive feedback on investigations & written responses. **Self-management skills – Organization** Planning time for investigations & drafting, organizing laboratory reports & essay writing, structuring investigation reports appropriately, managing multistep problem-solving tasks effectively. **Self-management – Reflection** Reflecting on mistakes in problem-solving, improving learning strategies, considering ethical, cultural, and environmental implications related to transport safety and accidents. **Thinking Skill – Creative Thinking** Designing investigations using toy cars, generating solutions to improve road safety, applying motion concepts to unfamiliar transport situations and safety scenarios. **Thinking Skills – Transfer Skills** Transferring mathematical understanding into physical contexts, applying equations of motion to real-life situations, connecting motion analysis to public safety and transport systems. **Thinking Skills – Critical Thinking** Analysing motion data and patterns, interpreting motion graphs, evaluating evidence and scientific claims about safety, analysing causes of accidents & transport-system effectiveness. **Communication skills** Using scientific language accurately in explanations and reports, presenting findings clearly in oral and written forms, explaining relationships between variables using graphs and diagrams, writing structured scientific explanations & essays.	**Kinematics** - Vector quantity & Scalar quantity. - Speed, Velocity & acceleration - Motion graphs & transformations between different graphs (distance/displacement−time & speed/velocity−time) - Equations of motion - Discussions on safety, the importance of laws/rules on the road and so on. - Free fall
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Movement** **Systems** **Balance**		
Global context	**Identities & Relationships** Personal health & safety. making informed choices that affect well-being		
Statement of inquiry	Understanding how **movement changes** within **systems** helps us **balance** speed and safety in our daily lives		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Physics
Grade 9 (MYP 4)

9

15 hours		ATL Skills	Content
Unit Title (3)	Forces & motion (Dynamics)	**Research Skills – Information literacy** Collecting, recording, and organizing scientific data effectively, interpreting sources about car safety and scientific innovation, referencing information accurately, analysing safety statistics and scientific evidence. **Research Skills – Media literacy** Analysing crash-test videos, simulations, traffic-safety campaigns, and scientific media sources related to momentum, force, braking systems, and safety innovation. **Social Skills - Collaboration** Collaborating during practical investigations, giving and receiving constructive feedback on methods and conclusions, and debates about transport safety and space exploration. **Self-management Skills – Organization** Organizing lab reports & extended responses effectively, structuring information appropriately in laboratory investigation reports, managing multistep calculations & scientific tasks systematically. **Self-management Skills – Reflection** Reflecting on errors in problem-solving, planning improvements, monitoring progress using reflection checklists, evaluating the effectiveness of scientific explanations and investigations. **Communication Skills** Using scientific language precisely in written explanations and discussions, presenting conclusions clearly in graphs, reports, essays, and debates, explaining scientific reasoning accurately using evidence and models. **Thinking Skill – Critical Thinking** Applying logic to solve multistep motion problems, analysing relationships between variables in force and motion, evaluating evidence from investigations and real-world cases, and interpreting data from scientific investigations. **Thinking Skill – Creative Thinking** Using brainstorming and visual diagrams to generate new ideas and inquiries, designing safer transport systems, proposing innovative vehicle safety features, applying physics concepts creatively to real-world problems. Thinking. **Thinking Skills – Transfer Skills** Applying Newton's laws, momentum, impulse, and circular motion concepts to unfamiliar real-life situations involving safety, transport, and innovation.	**Dynamics** - Newton's first law - Velocity-time graphs & terminal velocity - Newton's second law - Newton's third law - Mass, weight & gravity - Gravitational force - Momentum - Impulse - The law of conservation of momentum - Circular motion & centripetal force - Hooke's law
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Systems**		
Related concepts	**Consequences** **Interaction** **Movement**		
Global context	**Scientific & Technical Innovation** How humans use their understanding of scientific principles		
Statement of inquiry	The way in which bodies **move** within a dynamic **system** is a **consequence** of the **interaction** between them, understanding these interactions enables humans to design safer & more innovative solutions for society.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Physics
Grade 9 (MYP 4)

9

15 hours		ATL Skills	Content
Unit Title (4)	Work & Energy	**Thinking skills - Critical thinking** Recognizing & evaluating propositions, identifying obstacles & challenges, evaluating evidence & arguments, analysing energy loss in experiments, interpreting efficiency & energy transformations in systems. **Thinking Skills – Transfer Thinking** Comparing energy use across systems, applying energy concepts to real-world systems such as renewable energy technologies, electric motors, and sustainable engineering. **Communication Skills** Making inferences & drawing conclusions, presenting findings visually & verbally, communicating scientific reasoning through graphs, reports, presentations, & discussions. **Self-management – Organization** Organizing scientific investigations, using structured approaches during experiments & reports, understanding & using sensory learning preferences effectively during inquiry activities. **Self-management – Reflection** Reflecting on ethical, cultural, & environmental implications of energy use, sustainability, and renewable technologies, evaluating human energy choices critically. **Research Skills – Information literacy** Evaluating sources on renewable energy, making connections between various information sources, evaluating & selecting information sources and digital tools appropriately for scientific tasks. **Social Skills – Collaboration** Participating in peer feedback on hypotheses and procedures, collaborative investigations about energy loss & system efficiency, group inquiry discussions during practical work.	**Work & Energy** - Work & Energy - Forms of energy - Energy transformations - Types of mechanical energy - Calculations involving K.E & P.E - Conservation of energy - Transfers of energy - Power and efficiency - Sources of energy
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Energy Transformation Systems**		
Global context	**Scientific & Technical Innovation** How humans use their understanding of scientific principles		
Statement of inquiry	Understanding how **energy transformations** within **systems** influence efficiency empowers humans to design safer, more sustainable & innovative solutions for a **changing** world.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Biology
Grade 10 (MYP 5)

10

25 hours		ATL Skills	Content
Unit Title (1)	Function & Interaction	**Communication Skills** Taking notes, structuring reports and essays, presenting findings, using scientific language effectively, communicating to different audiences. **Thinking Skills – Creative Thinking** Brainstorming ideas, generating hypotheses, creating novel solutions, applying knowledge to generate new ideas. **Thinking Skills – Transfer Skills** Applying skills and knowledge in unfamiliar situations, combining understanding to create solutions. **Self-management - Reflection** Considering ethical, cultural, and environmental implications of scientific issues and reflecting on learning challenges. **Thinking Skills – Critical Thinking** Analyzing scientific information, interpreting data, evaluating hypotheses, proposing improvements, evaluating evidence and arguments. **Research Skills – Information Literacy** Processing data, evaluating information sources, identifying primary and secondary sources, creating references and citations. **Research Skills – Media literacy** Seeking perspectives from multiple and varied sources.	**Animal nutrition** - Diet - Digestion - The alimentary canal - Assimilation **Transport in animals** - Circulatory system - The heart - Blood vessels - Blood - Lymph & tissue fluid
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Systems**		
Related concepts	**Function** **Consequences** **Interaction**		
Global context	**Orientation in Space & Time**		
Statement of inquiry	The structural success of complex **systems** depends on how effectively individual components execute their **functions and interact** over time; misalignments inevitably lead to disruptive systemic **consequences.**		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Biology
Grade 10 (MYP 5)

10

10 hours		ATL Skills	Content
Unit Title (2)	Well-being	**Communication Skills** Taking effective notes in class, making study notes, previewing and skimming texts, structuring information in summaries and reports, presenting scientific findings clearly using correct biological terminology. **Thinking Skills – Creative Thinking** Applying existing knowledge to generate new ideas, creating testable hypotheses, using brainstorming and visual diagrams to generate scientific inquiries and solutions. **Thinking Skills – Transfer Skills** Applying skills and knowledge in unfamiliar situations, combining biological understanding with experimental design and data analysis to solve authentic scientific problems. **Thinking Skills – Critical Thinking** Analysing complex biological concepts, interpreting respiration and excretion data, evaluating evidence and arguments, revising understanding based on evidence, identifying obstacles and proposing solutions. **Research Skills – Information Literacy** Presenting information in multiple formats and platforms, processing data and reporting results. **Research Skills – Media literacy** Using animated simulators, videos, digital worksheets, online platforms, and scientific resources to analyse and understand respiration and excretion systems. **Self-management Skills – Organization** Structuring reports systematically, organizing investigation methods and variables, managing laboratory investigations and assignments effectively. **Self-management Skills – Reflection** Reflecting on terminology barriers, evaluating understanding and misconceptions, improving scientific precision and exam-response strategies. **Social Skills – Collaboration** Working collaboratively in group investigations, changing group roles, & supporting classmates during laboratory and formative tasks.	**Well – being** **Respiration & gas exchange** - Respiration - Gas exchange in humans - Breathing movements **Excretion** - Excretory products - Nitrogenous waste the human excretory system
MYP Objectives	A – Knowing & Understanding B – Inquiring & Designing C – Processing & Evaluating		
Key concept	Change		
Related concepts	Transformation Movement		
Global context	Globalization & sustainability		
Statement of inquiry	**Biological systems** rely on the **movement and transformation** of materials to remove toxic waste, managing internal **change** to sustain systemic balance and **well-being.**		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Biology
Grade 10 (MYP 5)

10

10 hours		ATL Skills	Content
Unit Title (3)	Dynamic Balance: Systems of Survival	**Communication Skills** Taking effective notes, making study notes, previewing and skimming scientific texts, using scientific language accurately, structuring essays & reports, communicating evidence-based conclusions, using a variety of speaking techniques and media. **Thinking Skills – Creative Thinking** Applying existing knowledge to generate new ideas, brainstorming explanations for biological interactions, using visual diagrams and models to explore homeostasis and disease response. **Thinking Skills – Transfer Skills** Applying scientific knowledge to unfamiliar situations, relating biological concepts to global health issues, vaccination, pandemics, and public health measures. **Thinking Skills – Critical Thinking** Analyzing interactions among immune, nervous, and endocrine systems, evaluating scientific evidence about COVID-19 and herd immunity, making scientifically supported judgments. **Research Skills – Information Literacy** Evaluating and selecting sources, identifying primary and secondary sources, creating citations and bibliographies, documenting research, evaluating digital tools and scientific evidence. **Research Skills – Media literacy** Seeking multiple perspectives regarding scientific issues such as vaccination, herd immunity, and responses to pandemics. **Self-management Skills – Reflection** Considering ethical, cultural, environmental, and societal implications of scientific solutions to health crises; reflecting on scientific applications & impacts. **Social Skills – Collaboration** Group investigations, peer assessment, peer discussions, collaborative activities, sharing ideas, clarifying misconceptions, and supporting others during learning tasks.	**Pathogens & immunity** – Pathogens – body defence – the immune system **Coordination & response** – Coordination in animals – The human nervous system – The endocrine system – Maintaining the internal environment – Control of body temperature – Control of blood glucose concentration
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Interaction** **Balance** **Environment**		
Global context	**Globalization & sustainability** Students will explore the effect of changing internal & external environment conditions on the body behaviour & how the body is adapted to cope with these changes		
Statement of inquiry	Maintaining internal **balance** requires dynamic biological **interactions** to cope with **changing environmental** conditions.		

MYP Subject Overview
Sciences – Biology
Grade 10 (MYP 5)

12 hours		ATL Skills	Content
Unit Title (4)	Decoding Inheritance: How Biology Shapes Identity	**Communication Skills** Taking notes, active reading, using scientific terminology accurately, explaining inheritance patterns, structuring essays and reports, presenting scientific arguments and conclusions. **Thinking Skills – Creative Thinking** Applying existing knowledge to explain inheritance, generating explanations from genetic evidence, using models and visual representations such as Punnett squares and chromosome diagrams. **Thinking Skills – Transfer Skills** Applying inheritance principles to unfamiliar genetic problems, using genetic knowledge in real-world contexts such as genetic engineering, reproductive technologies, and genetic disorders. **Thinking Skills – Critical Thinking** Analysing inheritance patterns, interpreting genetic evidence, evaluating scientific claims about reproductive technologies, analysing genotype-phenotype relationships, making scientifically supported judgments. **Research Skills – Information Literacy** Evaluating scientific evidence, selecting reliable sources, documenting research, identifying primary and secondary sources, creating citations and bibliographies, interpreting genetic data. **Research Skills – Media literacy** Investigating multiple perspectives regarding birth control, artificial insemination, and genetic manipulation; evaluating social and scientific viewpoints. **Self-management Skills – Reflection** Considering ethical, social, cultural, and environmental implications of reproductive technologies and gene manipulation; reflecting on scientific advances and their impact on society **Social Skills – Collaboration** Group investigations, peer assessment, collaborative inheritance problem-solving, discussing genetic evidence, explaining concepts to peers, cooperative learning activities.	**Human reproductive system** – Human reproductive organs – Fertilization and development – The menstrual cycle **Inheritance** – Chromosomes – Cell division – Inheritance – DNA and protein synthesis
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Relationships**		
Related concepts	**Evidence** **Models** **Patterns**		
Global context	**Identities & Relationships** Students will explore the scientific evidence that leads to models that lead to understand patterns of genetics		
Statement of inquiry	Scientific **evidence** is used to develop **models** that explain **patterns** of inheritance & the biological **relationships** that contribute to individual **identity**		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Chemistry
Grade 10 (MYP 5)

10

25 hours		ATL Skills	Content
Unit Title (1)	Chemical Energetics	**Thinking skills – Critical Thinking** Analysing energy changes and reaction pathways, interpreting energy profile diagrams, evaluating industrial energy efficiency, analysing environmental impacts of chemical reactions, applying scientific reasoning to energy calculations. **Thinking Skills – Transfer Skills** Applying scientific reasoning to unfamiliar industrial and environmental scenarios, connecting energetics concepts to sustainability and technological systems, applying chemistry knowledge to real-world energy problems. **Social skills – Collaboration** Participating in collaborative problem-solving tasks, group discussions about energy efficiency and sustainability. **Communication skills:** Using scientific terminology accurately when explaining energetics concepts, presenting calculations, diagrams, and scientific conclusions clearly, communicating scientific ideas effectively in written and oral formats. **Self-management skills – Organization** Organizing calculations, notes, & scientific data effectively. **Research skills – information literacy** Investigating industrial applications of exothermic & endothermic reactions, evaluating scientific information related to energy efficiency and sustainability, analysing industrial case studies and environmental impacts.	**Chemical Energetics** - Introduction to chemical energetics - Exothermic and endothermic reactions - Enthalpy Changes - Energy level diagrams - Activation energy - Industrial and environmental applications
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Energy Interaction**		
Global context	**Scientific & Technical Innovation** Systems, processes, & environmental impact of energy use		
Statement of inquiry	**Energy changes** in chemical reactions influence industrial processes, environmental sustainability, & the efficiency of technological systems.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Chemistry
Grade 10 (MYP 5)

10

20 hours		ATL Skills	Content
Unit Title (2)	**Rates of Reactions**	**Thinking skills – Critical Thinking** Analysing graphs and reaction data, interpreting relationships between variables and reaction rates, evaluating experimental trends, analysing collision frequency and successful collisions using kinetic particle theory. **Thinking Skills – Transfer Skills** Applying kinetic particle theory to unfamiliar experimental observations and industrial applications, connecting reaction conditions to industrial efficiency and environmental challenges. **Communication skills:** Using scientific terminology accurately when explaining reaction rates, presenting graphs, tables, and calculations clearly, communicating scientific conclusions effectively in written and oral formats. **Self-management skills – Organization** Structure information appropriately in laboratory investigation reports **Soila skills – Collaboration** Collaborating during laboratory investigations and discussions, providing constructive peer feedback, participating actively in inquiry-based learning activities and peer-review tasks.	**Rates of Reactions** - Introduction to rates of reactions - Collision theory & kinetic particle theory - Factors affecting the rate of reaction - Experimental measurements of reaction rates - Graphs & calculations - Industrial applications
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Change**		
Related concepts	**Energy** **Interaction**		
Global context	**Scientific & Technical Innovation** Processes & solutions to industrial & environmental challenges		
Statement of inquiry	**Changes** in reaction conditions affect particle **interactions** & collision frequency, influencing the rate & efficiency of chemical & industrial processes.		

MYP Subject Overview
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20 hours		ATL Skills	Content
Unit Title (3)	**Reversible Reactions & Equilibrium**	**Thinking skills – Critical Thinking** Analysing equilibrium systems & equilibrium shifts, interpreting relationships between variables & equilibrium position, evaluating equilibrium changes using Le Chatelier's principle, analysing industrial equilibrium systems and K_c values. **Thinking Skills – Transfer Skills** Applying scientific reasoning to equilibrium calculations & industrial scenarios, connecting equilibrium theory to environmental & technological systems, applying equilibrium concepts to unfamiliar chemical situations. **Social skills – Collaboration** Collaborating during investigations & discussions, participating actively in inquiry-based learning activities, providing constructive peer feedback during investigations and equilibrium-analysis tasks. **Communication skills:** Using scientific terminology accurately when explaining equilibrium concepts, presenting calculations, tables, & scientific explanations clearly, communicating conclusions effectively using scientific evidence in written and oral formats. **Self-management skills – Organization** Organizing calculations, experimental data, and scientific notes effectively, managing time during investigations & assignments, structuring equilibrium investigations systematically. Following laboratory safety procedures responsibly during equilibrium experiments and chemical investigations. **Research skills – information literacy** Investigating industrial applications of equilibrium systems, evaluating scientific information related to reversible reactions and industrial chemistry, analysing environmental considerations in industrial equilibrium systems.	**Reversible Reactions & Equilibrium** - Reversable reactions - Dynamic Equilibrium - Physical & Chemical Equilibrium - Homogeneous & heterogeneous equilibrium - Equilibrium constant K_c - K_c extension - Le Chatelier's principle - Industrial applications
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Relationships**		
Related concepts	**Interaction** **Balance**		
Global context	**Scientific & Technical Innovation** Processes & solutions in industrial & environmental systems		
Statement of inquiry	Changes in chemical conditions influence **interactions** within reversible systems, affecting equilibrium balance & the efficiency of industrial & environmental processes.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Chemistry
Grade 10 (MYP 5)

10

25 hours		ATL Skills	Content
Unit Title (4)	**Acids & Bases**	**Thinking skills – Critical Thinking** Interpreting data gained from scientific investigations, analysing titration results, evaluating acid–base strength & dissociation, interpreting pH changes & titration curves, making scientifically supported judgments about reactions & chemical applications. **Social skills – Collaboration** Giving & receiving meaningful feedback, practicing feedback on experimental-method design, participating in group work & collaborative laboratory investigations **Communication skills:** Organizing and depicting information logically, using appropriate visual representations of data, structuring summaries, essays, reports, & laboratory investigation reports clearly & scientifically **Self-management skills – Reflection** Considering ethical, cultural, & environmental implications related to acid and base use, laboratory safety, chemical disposal, & industrial applications **Self-management skills – Organization** Organizing laboratory work, managing investigations & assignments, structuring titration procedures, preparing reports & calculations systematically **Research skills – Information literacy** Making connections between scientific research and moral, ethical, social, economic, political, cultural, and environmental factors related to acids, bases, water hardness, titrations, and chemical management. **Research Skills – Media literacy** Using videos, simulations, posters, laboratory models, and scientific resources to investigate acid–base theories, pH, titrations, & buffer systems.	**Acids & Bases** - Theories of acids & bases - Strong and weak acids & bases - The pH scale - Calculations involving acids & bases - Neutralization reactions & acid–base titrations - Buffers Solutions
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Relationships**		
Related concepts	**Function**		
Global context	**Fairness & Development** Rights & responsibilities		
Statement of inquiry	The strength of acids & bases is **related** to the **function** of the degree of dissociation & determines how they should be used & disposed of		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Chemistry
Grade 10 (MYP 5)

10

30 hours		ATL Skills	Content
Unit Title (5)	**Organic Chemistry**	**Thinking Skills – Critical Thinking** Analysing patterns in homologous series and organic reactions, interpreting structural formulas & reaction pathways, evaluating relationships between molecular structure, reactivity, & industrial / environmental impact. **Thinking Skills – Creative Thinking** Applying scientific reasoning to unfamiliar organic chemistry problems, connecting organic reactions to industrial applications, sustainability, fuels, plastics, & environmental systems. **Communication Skills** Using scientific terminology correctly in written and oral explanations, presenting molecular structures & reaction equations clearly, communicating scientific conclusions using appropriate representations & nomenclature. **Self-management Skills – Organization** Organizing laboratory data & scientific notes effectively, managing time during investigations & assignments, following laboratory safety procedures responsibly during combustion & organic-reaction investigations. **Self-management Skills – Reflection** Reflecting on environmental sustainability, ethical issues related to plastics & fossil fuels & evaluating how chemistry impacts industrial development & society.	**Organic Chemistry** - Introduction to organic chemistry - IUPAC system of naming organic compounds - Functional groups & properties - Organic reactions - Environmental & industrial applications
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Structure (Form)** **Energy** **Interaction**		
Global context	**Scientific & Technical Innovation** Development of materials, products, & industrial processes		
Statement of inquiry	The **structure** & **energy changes** of organic compounds determine their chemical behaviour, industrial applications, & environmental impact.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Physics
Grade 10 (MYP 5)

10

20 hours		ATL Skills	Content
Unit Title (1)	Thermal Effects	**Thinking Skills – Critical Thinking** Interpreting thermal data, drawing reasonable conclusions & generalizations, analysing heat transfer processes, evaluating thermal behavior & sustainability issues using scientific reasoning. **Thinking Skills – Transfer** Applying skills & knowledge in unfamiliar situations, comparing conceptual understanding across disciplines, combining knowledge and skills to create solutions, applying thermal calculations to unfamiliar systems & environmental contexts. **Research Skills – Information Literacy** Collecting, recording, and verifying data, analysing data to identify solutions, processing & reporting results, creating references & citations, constructing bibliographies using recognized scientific conventions. **Research Skills – Media Literacy** Evaluating climate & energy sources, analysing simulations, climate-data websites, scientific videos, & sustainability case studies related to heat transfer & global warming. **Communication Skills** Making inferences & drawing conclusions, taking effective notes in class, presenting scientific arguments clearly in essays, lab reports, & discussions using appropriate scientific terminology. **Self-management Skills – Organization** Managing investigations systematically, meeting interim deadlines, organizing laboratory reports and scientific essays, structuring inquiry investigations and calculations effectively.	**Thermal Effects** - Particle theory of matter - Temperature vs thermal energy - Expansion of solids and liquids - Conduction, convection, radiation - Evaporation and boiling - Specific heat capacity - Latent heat
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Energy Interaction**		
Global context	**Globalization & sustainability** The connections between local energy use, global heat transfer processes, & their impact on climate systems & sustainability.		
Statement of inquiry	**Changes** in thermal **energy** transfer through **interactions** of particles affect the physical behaviour of matter & influence **global** environmental systems & **sustainability**.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Physics
Grade 10 (MYP 5)

10

30 hours		ATL Skills	Content
Unit Title (2)	**Waves & Sound**	**Thinking Skills – Critical Thinking** Interpreting wave data, drawing reasonable conclusions & generalizations, analysing wave effects such as reflection, refraction, diffraction, & interference, evaluating natural phenomena like echoes & reverberation using scientific reasoning. **Thinking Skills – Transfer** Applying skills & knowledge in unfamiliar situations, comparing understanding across multiple disciplines, combining knowledge & skills to create solutions and explaining wave applications in technology & medicine. **Research Skills – Information Literacy** Collecting, recording, & verifying data, analysing data to identify solutions & make informed decisions, processing & reporting results, creating references & citations for the ultrasound essay according to recognized conventions. **Self-Management Skills – Organization** Managing long-term assignments such as the ultrasound essay, organizing scientific notes and references effectively, preparing structured written explanations & research-based responses. **Self-Management Skills – Reflection** Reflecting on the social and ethical implications of sound technologies, ultrasound applications, and technological advancements affecting communication, medicine, and society **Communication Skills** Making inferences & drawing conclusions, taking effective notes in class, communicating scientific explanations clearly in essays & discussions using correct scientific terminology & wave representations	**Waves & Sound** - Wave characteristics & equation - Transverse & longitudinal waves - Wave effects (reflection, refraction, diffraction & interference - Nature of sound waves - Speed of sound & echo - Sound characteristics
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating** **D – Reflecting on the impacts of science**		
Key concept	**Change**		
Related concepts	**Energy** **Interaction**		
Global context	**Scientific & Technical Innovation** How scientific understanding leads to the development of tools & technologies that transform human life.		
Statement of inquiry	Understanding wave **movement** allows humans to explain natural phenomena & develop **technologies** that **change** the way people communicate, detect & interact with the world.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Physics
Grade 10 (MYP 5)

10

30 hours		ATL Skills	Content
Unit Title (3)	**Rays & Waves**	**Thinking Skills – Critical Thinking** Interpreting experimental data, drawing reasonable conclusions & generalizations, analysing reflection & refraction phenomena, evaluating optical systems and electromagnetic-wave applications using scientific reasoning. **Thinking Skills – Transfer** Applying skills and knowledge in unfamiliar situations, comparing conceptual understanding across disciplines, combining scientific understanding & skills to explain lenses, telescopes, microscopes, optical fibers, & real-world optical technologies. **Research Skills – Information Literacy** Collecting, recording, & verifying data, analysing data to identify solutions & make informed decisions, processing & reporting results, constructing references and citations according to recognized conventions during essays & investigations **Research Skills – Media Literacy** Evaluating reliability of web sources, analysing simulations, online resources, optical demonstrations, & scientific applications related to refraction, lenses, & the electromagnetic spectrum **Communication Skills** Making inferences & drawing conclusions, taking effective notes in class, presenting scientific arguments clearly in laboratory reports, essays, diagrams, & scientific discussions **Self-management Skills – Organization** Managing long-term investigations & essays, meeting interim deadlines, organizing lab reports & scientific essays systematically, scaffolding inquiry investigations effectively	**Rays & Waves** - Light and shade - Reflection on plane mirrors - Refraction of light - Total internal reflection - Lenses – ray diagrams - The thin lens equation - Electromagnetic waves
MYP Objectives	**A – Knowing & Understanding** **B – Inquiring & Designing** **C – Processing & Evaluating**		
Key concept	**Change**		
Related concepts	**Energy** **Interaction**		
Global context	**Scientific & Technical Innovation** How scientific understanding leads to the development of tools & technologies that transform human life.		
Statement of inquiry	**Changes** in the **interaction** of light & **energy** at boundaries lead to new scientific understandings & drive innovations in optical technologies that transform how humans observe & interact with the world.		

RAMALLAH FRIENDS SCHOOL

MYP Subject Overview
Sciences – Physics
Grade 10 (MYP 5)

10

15 hours		ATL Skills	Content
Unit Title (4)	**Electricity**	**Thinking Skills – Transfer Skills** Applying skills & knowledge in unfamiliar situations, comparing conceptual understanding across multiple subject groups and disciplines, combining scientific knowledge & skills to solve problems related to circuits, resistance, & electricity applications. **Thinking Skills – Transfer** Analysing electric circuits, evaluating conservation of charge & conservation of energy, interpreting relationships between resistance, conductor shape, current, & voltage using scientific reasoning **Communication Skills** Making inferences & drawing conclusions, taking effective notes in class, communicating scientific explanations related to circuits, batteries, & electric energy clearly in written & oral forms **Research Skills – Information literacy** Investigating batteries & electrical technologies, analysing scientific information related to energy conservation, electric circuits, & global warming, using simulations & scientific resources to support understanding. **Self-management Skills – Organization** Solving multistep calculations systematically, organizing scientific notes and worksheets effectively, preparing essays & inquiry responses with structured reasoning **Self-management Skills – Reflection** Reflecting on the role of electricity & batteries in human civilization, evaluating environmental implications such as global warming & technological dependence on electrical energy.	**Electricity** - Electric Charge - Current in a simple circuit - Potential difference - Resistance - Ohm's law - Parallel and series circuits
MYP Objectives	**A – Knowing & Understanding** **D – Reflecting on the impacts of science**		
Key concept	**Relationships**		
Related concepts	**Energy**		
Global context	**Scientific & Technical Innovation** Explore the natural world & its laws; the interaction between people & the natural world		
Statement of inquiry	Displacing electric charge will produce electric potential & electric potential energy, this energy is used to run circuits.		