

MCS IB Physics Y1 Subject Group Overview

Unit Name	Space, Time, and Motion	Particulate Nature of matter	Wave behavior	Internal Assessment
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Time Frame	11 weeks	10 weeks	9 weeks	3 Weeks
Standards/ IB Topics	A.1, A.2, A.3	B.1, B.2, B.3, B.5	C.1, C.2, C.3, C.4, C.5	Internal Assessment
Content Specific Information (texts, documents, methods)	<p>Statement of Inquiry All objects, which have mass, can have their motion described mathematically in relation to their displacement, velocity, and acceleration within a given reference frame.</p> <p>Phenomenon: Technically, a perfectly designed roller coaster does not need harnesses.</p> <p>Crosscutting Concepts</p> <ul style="list-style-type: none"> • Scale, Proportion, and Quantity • Systems and System Models • Energy and Matter • Cause and Effect <p>CORE IDEAS</p> <ul style="list-style-type: none"> • Displacement, velocity, and acceleration • Motion graphs • Kinematic equations • Projectile Motion • Free body diagrams • Newton's Laws of motion • Types of energy • Power • Conservation of energy • Conservation of linear momentum 	<p>Statement of Inquiry Energy cannot be created or destroyed, but studying the transfer of differing types of energy helps to describe the nature of matter.</p> <p>Phenomenon: Energy always “evens out” causing moving things to eventually stop and temperature to equalize.</p> <p>Crosscutting Concepts</p> <ul style="list-style-type: none"> • Energy and Matter • Cause and Effect • Patterns • Systems and System Models <p>CORE IDEAS</p> <ul style="list-style-type: none"> • Molecular Theory of solids, liquids, and gasses • Density • Kelvin and Celsius • Internal energy • Thermal energy • Phase changes • Energy Transfer • Luminosity • Conservation of Energy • Emissivity • Greenhouse effect • Gas Laws 	<p>Statement of Inquiry The motion and interactions of waves can be predicted through analysis of the distinct features of each wave.</p> <p>Phenomenon: All waves can be described in one way or another by the idea of simple harmonic motion.</p> <p>Crosscutting Concepts</p> <ul style="list-style-type: none"> • Systems • Energy and Matter <p>CORE IDEAS</p> <ul style="list-style-type: none"> • Simple Harmonic Motion • Oscillation • Pendulums • Wave Model • Wavelength • Frequency • Period • Wave speed • Wavefronts and Rays • Snell's Law • Superposition • Interference • Young's Double Slit • Standing waves • Resonance • Damping • Doppler Effect 	<p>Assessments in IB Physics – Year 1 – Internal Assessment Student Investigation Proposal</p> <p>Practice IB style Exams over Year 1 Topics – simulating Paper 1 and Paper 2</p> <p>Note: The exams will be practiced throughout the year.</p> <p>Crosscutting Concepts: ALL</p> <p>CORE IDEAS:</p> <ul style="list-style-type: none"> • What is the IA? • Academic Integrity Policy • Rubrics • Developing a research question • Variable Identification • Methodology for individual or collaborative work • Research design • Data Analysis • Statistics • Conclusion • Evaluation <p>*Will go over all parts of the IA and assign the design proposal only in Y1.</p>

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	<ul style="list-style-type: none"> ● Impulse ● Types of collisions 	<ul style="list-style-type: none"> ● Current and circuits ● Ohm's Law 		
Common Assessments/ Major Projects	<p>Internal Assessment Preparation</p> <p>Practice IB Exams</p> <p>SEP</p> <ul style="list-style-type: none"> ● Asking Questions and Defining Problems ● Developing & Using Models ● Planning and Carrying out investigations ● Analyzing & interpreting data ● Constructing Explanations ● Use mathematics and computational thinking ● Obtaining, evaluating and communicating information 	<p>Internal Assessment Preparation</p> <p>Practice IB Exams</p> <p>SEP</p> <ul style="list-style-type: none"> ● Asking Questions and Defining Problems ● Developing & Using Models ● Planning and Carrying out investigations ● Analyzing & interpreting data ● Use mathematics and computational thinking ● Constructing Explanations ● Obtaining, evaluating and communicating information 	<p>Practice IB Exams</p> <p>SEP</p> <ul style="list-style-type: none"> ● Asking Questions and Defining Problems ● Developing & Using Models ● Carry out Investigations ● Analyzing & interpreting data ● Use mathematics and computational thinking ● Engage in Argument from Evidence ● Obtaining, evaluating and communicating information 	<p>Internal Assessment Beginning</p> <p>SEP</p> <ul style="list-style-type: none"> ● Asking Questions and Defining Problems ● Developing & Using Models ● Carry out Investigations ● Analyzing & interpreting data ● Use mathematics and computational thinking ● Engage in Argument from Evidence ● Obtaining, evaluating and communicating information
Level Specific Differentiation	<p>Marietta City Schools teachers provide specific differentiation of learning experiences for all students. Details for differentiation for learning experiences are included on the district unit planners.</p>			
Resources	<ul style="list-style-type: none"> ● Schoology Course Page ● IB Physics Guide First Assessment 2025 ● Textbook TBD - evaluation of resources ● Van de Lagemaat, R. www.inthinking.net: Andorra la Vella, Andorra, 2019 ● Discovery Education Physics Resources <p>Additional resources from old syllabus</p> <ul style="list-style-type: none"> ● Hodder Study and Revision Guide for the IB Diploma ● Hodder IA Internal Assessment for Physics 			