

MCS IB Physics Y1 Subject Group Overview

Unit Name	Measurements and uncertainties	Mechanics	Option B: Engineering Physic	Thermal Physics	Waves	Exams/ Review
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Time Frame	3 weeks	9 weeks	8 weeks	8 weeks	4 weeks	3 weeks
Standards/ IB Topics	1.1, 1.2, 1.3	2.1, 2.2, 2.3, 2.4	B.1, B.2	4.1, 4.2, 4.3, 4.4	3.1, 3.2	All Topics
Content Specific Information (texts, documents, methods)	<p>Statement of Inquiry Measurement is a process of detecting an unknown physical quantity by using standard quantity.</p> <p>Phenomenon: A plane can “fly blind” and arrive safely at the correct location by simply using vector coordinates.</p> <p>Crosscutting Concepts</p> <ul style="list-style-type: none"> ● Scale, Proportion, and Quantity ● Systems and System Models <p>CORE IDEAS</p> <ul style="list-style-type: none"> ● Units and the metric system ● Precise measurements ● Errors and Uncertainties ● Vectors vs scalars ● Combining vectors 	<p>Statement of Inquiry An object is said to undergo projectile motion when it follows a curved path due to the influence of gravity.</p> <p>Phenomenon: Technically, a perfectly designed roller coaster does not need harnesses.</p> <p>Crosscutting Concepts</p> <ul style="list-style-type: none"> ● 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 ● Impulse ● Types of collisions 	<p>Statement of Inquiry When a force acts upon an object, it may move but it may also rotate.</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"> ● Systems ● Energy and Matter <p>CORE IDEAS</p> <ul style="list-style-type: none"> ● Torque ● Moment of Inertia ● Rotational Equilibrium ● Rotational motion ● 3 Laws of thermodynamics ● Entropy ● Isovolumetric, isobaric, isothermal, and adiabatic processes ● Carnot cycles 	<p>Statement of Inquiry Wave motion transfers energy from one point to another, often with no permanent displacement of the particles of the medium.</p> <p>Phenomenon: Power plants harness temperature differences to generate electrical power.</p> <p>Crosscutting Concepts</p> <ul style="list-style-type: none"> ● Systems and System Models ● Energy and Matter <p>CORE IDEAS</p> <ul style="list-style-type: none"> ● Temperature ● Internal energy ● Specific heat capacity and specific latent heat ● Pressure ● Ideal gas equation ● Kinetic model of ideal gas ● The mole 	<p>Statement of Inquiry Energy may exist in potential, kinetic, thermal, electrical, chemical, nuclear, or other various forms.</p> <p>Phenomenon: Waves might seem like they are moving matter but in reality, they are only moving energy.</p> <p>Crosscutting Concepts</p> <ul style="list-style-type: none"> ● Patterns ● Energy and Matter <p>CORE IDEAS</p> <ul style="list-style-type: none"> ● Simple Harmonic Motion ● Parts of waves ● Transverse and longitudinal waves ● Wave speed ● Fronts and rays ● Superposition ● Polarization ● Snell’s Law ● Interference of waves ● Standing waves 	<p>Review all previous topics</p> <p style="text-align: center;">Topic Summative Assessments</p> <p style="text-align: center;">Practice IB Exams</p>

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			Thermal efficiency			
Common Assessments/ Major Projects	Internal Assessment Preparation Practice IB Exams SEP <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 	Internal Assessment Preparation Practice IB Exams SEP <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 	Practice IB Exams SEP <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 	Internal Assessment Preparation Practice IB Exams SEP <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 	Internal Assessment Preparation Practice IB Exams SEP <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 	Final Exam
Level Specific Differentiation	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.					
Resources	<ul style="list-style-type: none"> ● Schoology Course Page ● Pearson IB Physics textbook (problems and labs) 	<ul style="list-style-type: none"> ● Schoology Course Page ● Pearson IB Physics textbook (problems and labs) 	<ul style="list-style-type: none"> ● Schoology Course Page ● Pearson IB Physics textbook (problems and labs) 	<ul style="list-style-type: none"> ● Schoology Course Page ● Pearson IB Physics textbook (problems and labs) 	<ul style="list-style-type: none"> ● Schoology Course Page ● Pearson IB Physics textbook (problems and labs) 	Schoology Course Page