

MCS IB Physics Y2 Subject Group Overview

Unit Name	Measurement and Uncertainty	Waves	Internal assessment	Electricity and Magnetism	Energy Production	Atomic and Nuclear Physics	Exams and Review
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Time Frame	2 weeks	4 weeks	3 weeks	8 weeks	5 weeks	7 weeks	3 weeks
Standards/ IB Topics	1.1, 1.2, 1.3	3.1, 3.2	IA	5.1, 5.2, 5.3, 5.4	8.1, 8.2	7.1, 7.2, 7.3	All topics
Content Specific Information (texts, documents, methods)	<p>Statement of Inquiry Measurement is a process of detecting an unknown physical quantity by using a standard quantity.</p> <p>Phenomenon: A plane can “fly blind” and arrive safely at the correct location simply by 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 	<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 	<p>Scientific Investigation</p> <p>The IA, worth 20% of the final assessment, consists of one scientific investigation. This individual investigation will cover a topic that is commensurate with the level of the course of study.</p> <p>Assessed by the teacher, and externally moderated by the IB.</p> <p>IA Component Duration: 10 hours Weighting: 20% Individual investigation.</p>	<p>Statement of Inquiry The various manifestations of electricity are the result of the accumulation or motion of numbers of electrons</p> <p>Phenomenon: Energy can be efficiently transferred through the use of moving electrons.</p> <p>Crosscutting Concepts</p> <ul style="list-style-type: none"> Cause and Effect Systems and System models <p>CORE IDEAS</p> <ul style="list-style-type: none"> Charges and electric fields Coulomb’s Law Current and Potential Difference Circuits Ohm’s and Kirchhoff’s Laws 	<p>Statement of Inquiry Some energy will be lost to surroundings and will not be used to perform useful work.</p> <p>Phenomenon: The Earth will run out of non-renewable energy much sooner than we think.</p> <p>CORE IDEAS</p> <ul style="list-style-type: none"> Sankey Diagrams Black body radiation Albedo and emissivity The solar constant and greenhouse effect Forms of renewable energy and resources 	<p>Statement of Inquiry The energy of a photon is dependent on its frequency.</p> <p>Phenomenon: Matter is made up of many fundamental particles.</p> <p>Core Ideas</p> <ul style="list-style-type: none"> Energy levels Radioactive decay Isotopes Mass defect and binding energy Nuclear fission and fusion Quarks, lepton, and their antiparticles Conservation laws Exchange particles Feynman diagrams 	<p>Review all previous topics</p> <p>Topics summative assessments</p> <p>Practice IB exams</p>

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	Uncertainties <ul style="list-style-type: none"> • Vectors vs scalars • Combining vectors 	<ul style="list-style-type: none"> • Standing waves 		<ul style="list-style-type: none"> • Resistivity • Internal resistance of a cell • Magnetic fields and forces 			
Common Assessments/ Major Projects	Internal Assessment Preparation Practice IB Exams SEP Asking Questions and Defining Problems Developing & Using Models Planning and Carrying out investigations Analyzing & interpreting data Constructing Explanations Use mathematics and computational thinking Obtaining,	Internal Assessment Preparation Practice IB Exams SEP 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	IA Criteria Personal engagement: 8% Exploration: 25% Analysis: 25% Evaluation: 25% Communication: 17% Internal Assessment final report	Internal Assessment Preparation Practice IB Exams SEP 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 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 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	IA and IB Exam

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	evaluating and communicating information					Obtaining, evaluating and communicating information	
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 Hodder IB Physics textbook (problems and labs) 	<ul style="list-style-type: none"> Schoology Course Page Hodder IB Physics textbook (problems and labs) 	<ul style="list-style-type: none"> Schoology Course Page Hodder IB Physics textbook (problems and labs) 	<ul style="list-style-type: none"> Schoology Course Page Hodder IB Physics textbook (problems and labs) 	<ul style="list-style-type: none"> Schoology Course Page Hodder IB Physics textbook (problems and labs) 	Schoology Course Page	Schoology Course Page