

MCS Physics Subject Group Overview

Unit Name	1D Motion	2D Motion	Newton's Laws	Momentum	Energy	Nuclear	Electricity & Magnetism	Waves
Time Frame	6 weeks	6 weeks	6 weeks	3 weeks	5 weeks	3 weeks	4 weeks	3 weeks
Standards	SP1.a, SP1.b, SP1.c	SP1.c,d, SP2.d	SP2.a, SP2.b, SP2.c, SP2.d, SP2.e	SP3.d	SP3.a , SP3.b , SP3.c	SP6.a, SP6.b, SP6.c	SP5.a, SP5.b, SP5.c, SP5.d, SP5.e	SP4.a, SP4.b, SP4.c, SP4.d, SP4.e, SP4.f, SP4.g
Approaches To Learning Instructional Strategies	<p>SEP</p> <ul style="list-style-type: none"> Using Mathematics and Computational Thinking, Engaging in Arguments from Evidence <p>ATL</p> <p>Research Skills Thinking Skills Collaboration Skills Communication Skills</p>	<p>SEP</p> <ul style="list-style-type: none"> Using Mathematics and Computational Thinking, Analyzing and Interpreting Data Planning and Carrying out Investigations <p>ATL</p> <p>Research Skills Thinking Skills Collaboration Skills Communication Skills</p>	<p>SEP</p> <ul style="list-style-type: none"> Using Mathematics and Computational Thinking, Analyzing and Interpreting Data Make inferences and draw conclusions, Give and receive meaningful feedback, Process data and record results <p>ATL</p> <p>Research Skills Thinking Skills Collaboration Skills Communication Skills</p>	<p>SEP</p> <ul style="list-style-type: none"> Using Mathematics and Computational Thinking, Analyzing and Interpreting Data Make inferences and draw conclusions, Give and receive meaningful feedback, Process data and record results <p>ATL</p> <p>Research Skills Thinking Skills Collaboration Skills Communication Skills</p>	<p>SEP</p> <ul style="list-style-type: none"> Using Mathematics and Computational Thinking, Planning and Carrying out Investigations Collect, record, and analyze data <p>ATL</p> <p>Research Skills Thinking Skills Collaboration Skills Communication Skills</p>	<p>SEP</p> <ul style="list-style-type: none"> Obtaining, Evaluation, and Communication Information Make inferences and draw conclusions <p>ATL</p> <p>Research Skills Thinking Skills Collaboration Skills Communication Skills</p>	<p>SEP</p> <ul style="list-style-type: none"> Asking Questions and Defining Problems Give and receive meaningful feedback <p>ATL</p> <p>Research Skills Thinking Skills Collaboration Skills Communication Skills</p>	<p>SEP</p> <ul style="list-style-type: none"> Developing and Using Models Make guesses, ask "what if" questions and generate testable hypothesis <p>ATL</p> <p>Research Skills Thinking Skills Collaboration Skills Communication Skills</p>

MCS Physics Subject Group Overview

Statement of Inquiry	<p>Modeling changes in motion graphically and mathematically predicts future movement.</p> <p>Phenomenon: All motion is composed of just a few components acting together creating a variety of different motion.</p>	<p>Modeling changes in motion graphically and mathematically predicts future movement.</p> <p>Phenomenon: The Hammer throw in track & field requires precise motion in order to launch the hammer for max range.</p>	<p>The relationships between interacting objects cause changes in their motion that can be used to discover their intrinsic properties.</p> <p>Phenomenon: Sledding inertia: A kid on a sled being pulled rapidly will not move with the sled (the kid fell off) unless the force of friction is large enough</p>	<p>Modeling transfers of momentum to predict the outcome of car crashes.</p> <p>Phenomenon: Cars are much safer now than they were 100 years ago.</p>	<p>Energy changing from one form to another can be captured for useful means.</p> <p>Phenomenon: Energy is always conserved, even when motion is not uniform or friction is involved</p>	<p>Transformations of atoms follow predictable patterns that can be used for the production of power.</p> <p>Phenomenon: Atomic nuclei are unstable (radioactive) if you do not have the right number of protons and neutrons.</p>	<p>The movement of electrons can be modeled by examining specific relationships, allowing for transmission of information.</p> <p>Phenomenon: Electrical power is one of the most efficient methods for transporting energy.</p>	<p>The nature of waves can be discovered by examining their interactions with matter.</p> <p>Phenomenon: Vibrations propagate in the form of waves. Waves transfer energy without transferring mass.</p>
Global Context	Scientific and Technical Innovation	Scientific and Technical Innovation	Scientific and Technical Innovation	Scientific and Technical Innovation	Scientific and Technical Innovation	Scientific and Technical Innovation	Scientific and Technical Innovation	Scientific and Technical Innovation
Key Concepts	Cause & Effect (CCC) Stability & Change (CCC) Systems & System (MYP) Models (CCC) Patterns (CCC)	Cause & Effect (CCC) Stability & Change (CCC) Systems & System (MYP) Models (CCC) Patterns (CCC)	Patterns (CCC) Matter & Energy (MYP/CCC) Structure & Function (CCC)	Cause & Effect (CCC) Stability & Change (CCC) Systems & System Models (MYP/CCC) Patterns (CCC)	Stability & Change (CCC) Matter & Energy (MYP/CCC) Patterns (CCC)	Matter & Energy (MYP/CC) Stability & Change (CC) Scale, Proportion & Quantity (CC)	Scale, Proportion & Quantity (CC) Matter & Energy (MYP/CC) Stability & Change (CC)	Patterns (CC) Scale, Proportion & Quantity (CC) Systems & System Models (MYP/CC)
Related Concepts	Movement & Energy	Movement & Energy	Movement & Evidence	Movement and Momentum	Energy & Transformation	Energy & Form	Energy & Interactions	Movement & Energy

MCS Physics Subject Group Overview

Core Ideas	CORE IDEAS <ul style="list-style-type: none"> ● Kinematics ● Scalars ● Vectors ● Displacement 	CORE IDEAS <ul style="list-style-type: none"> ● Projectile Motion ● Vector Diagrams 	CORE IDEAS <ul style="list-style-type: none"> ● Laws of Motion ● Free Body Diagrams ● Acceleration ● Friction ● Universal Gravitation 	CORE IDEAS <ul style="list-style-type: none"> ● Momentum ● Impulse ● Conservation of momentum ● Transfer of momentum 	CORE IDEAS <ul style="list-style-type: none"> ● Potential energy ● Kinetic energy ● Work ● Power ● Conservation of Mechanical energy ● Work Energy Theorem 	CORE IDEAS <ul style="list-style-type: none"> ● Atomic structure ● Nuclear Notation ● Ions & Isotopes ● Nuclear Decay ● Nuclear Decay and Half Life ● Energy Released in nuclear reactions 	CORE IDEAS <ul style="list-style-type: none"> ● Electricity ● Circuits ● Magnetism ● Static Electricity ● Voltage ● Resistance 	CORE IDEAS <ul style="list-style-type: none"> ● Electromagnetic radiation ● Transverse Waves ● Properties of Waves ● Wave Patterns ● Boundary Behavior
Differentiation For Tiered Learners	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.							
Course Levels	Marietta City Schools offers Enhanced, Honors, Accelerated, and AP classes to provide differentiated learning experiences for students.							