



## Marietta City Schools

### 2023–2024 District Unit Planner

*Science Grade 8*

Unit title	<i>Atomic Structure &amp; Periodic Table</i>	MYP year	3	Unit duration (hrs)	15 Hours
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**Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit):** *What will students learn?*

#### GSE Standards

##### Standards

##### **S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.**

- S8P1.e. Develop models (e.g., atomic level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (protons, neutrons, electrons) and simple molecules.

##### **Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT)**

Students preview particles during Unit 1: Energy Forms and Transformations, to begin building connections between matter and energy. Students will now relate a particle to an atom.

##### **Concepts/Skills to be Mastered by Students**

- Matter (structure, composition, properties)
- Elements and compounds

##### **Key Vocabulary: (KNOWLEDGE & SKILLS)**

pure substance, matter, element, compound, molecule, atom, protons, neutrons, electrons, particle, Periodic Table of elements, pattern, structure, composition, atomic number, atomic mass, mass number, period, group/family, electron shell/orbital/energy level, metal, metalloid, non-metal

##### **Year-Long Anchoring Phenomena: (LEARNING PROCESS)**

Human Need for Energy

##### **Unit Phenomena (LEARNING PROCESS)**

What elements do I have for breakfast?

How can I understand an element's properties by using the periodic table?

##### **Possible Preconceptions/Misconceptions: (REFLECTION – PRIOR TO TEACHING THE UNIT)**

MCS MYP Science 8 Unit 3 Planner. Published: September, 2023

Resources, materials, assessments not linked to SGO or unit planner will be reviewed at the local school level.

<ul style="list-style-type: none"> <li>Students may have difficulty recalling the number of electrons that will fill electron shells/orbitals/energy levels.</li> <li>Students may confuse Periodic Table groups/families and periods.</li> </ul>		
Key concept	Related concept(s)	Global context
<b>Relationships (MYP)</b> Relationships are the connections and associations between properties, objects, people and ideas - including the human community's connections with the world in which we live. Any change in a relationship brings consequences.	Patterns (MYP/CCC)	<b>Scientific and technical innovation</b> How the world works: an inquiry into the natural world and its laws; the interaction between the natural world (physical and biological) and human societies; how humans use their understanding of scientific principles; the impact of scientific and technological advances on society and on the environment.
Statement of inquiry		
Scientific and technical advancements enable scientists to understand relationships and patterns that exist related to the structure and function of elements in our natural world.		
Inquiry questions		
<p><b>Factual</b></p> <ul style="list-style-type: none"> <li>How are atoms structured?</li> <li>What are protons, neutrons, and electrons? Where do they belong in atoms and what are their charges?</li> <li>What is the difference between an atom's atomic number and atomic mass?</li> <li>What are the similarities and differences between metals, non-metals, and metalloids?</li> </ul> <p><b>Conceptual</b></p> <ul style="list-style-type: none"> <li>How can I model atomic structure?</li> <li>How can the Periodic Table be used to predict the structure, composition, and characteristics of atoms?</li> </ul> <p><b>Debatable</b></p> <ul style="list-style-type: none"> <li>Is the Periodic Table the most efficient way to group known elements?</li> <li>Is the Bohr Model the most accurate model to present the atomic structure of an element?</li> </ul>		

MYP Objectives	Assessment Tasks	
<i>What specific MYP <b>objectives</b> will be addressed during this unit?</i>	<i><b>Relationship</b> between summative assessment task(s) and statement of inquiry:</i>	<i>List of common formative and summative assessments.</i>
<p>Criterion A: Knowing and Understanding</p> <p>I. describe scientific knowledge</p> <p>Criterion B: Inquiring and Designing</p> <p>I. describe a problem or question to be tested by a scientific investigation</p> <p>Criterion C: Processing and Evaluating</p> <p>I. present collected and transformed data</p> <p>li.interpret data and describe results using scientific reasoning</p> <p>Criterion D: Reflecting on the Impacts of Science</p> <p>lii. apply scientific language effectively</p>	<p>SOI: Scientific and technical advancements enable scientists to understand relationships and patterns that exist related to the structure and function of elements in our natural world.</p> <p>The MYP summative assessment tasks require students to use the Periodic Table in order to model, recognize, and identify atoms and their subatomic particles. In doing so, students are tasked with understanding and using the Periodic Table to make predictions regarding the structure, properties, and uses of the elements in our natural world.</p>	<p><b><u>Formative Assessment(s):</u></b></p> <p>Atomic Structure CFA</p> <p><b><u>Summative Assessment(s):</u></b></p> <p>AS &amp; PT Paper I Unit Assessment (Science A)</p> <p>AS &amp; PT Paper II Unit Assessment (Science A,D)</p>
Approaches to learning (ATL)		
<p><b>Category:</b> Thinking</p> <p><b>Cluster:</b> Critical-Thinking Skills</p> <p><b>Skill Indicator:</b> Identify trends and forecast possibilities</p>		



<p style="text-align: center;"><b><u>Learning Experiences</u></b></p> <p style="text-align: center;">Add additional rows below as needed.</p>		
Objective or Content	Learning Experiences	Personalized Learning and Differentiation
<p><b>S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.</b></p> <ul style="list-style-type: none"> <li>S8P1.e. Develop models (e.g., atomic level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (protons, neutrons, electrons) and simple molecules.</li> </ul>	<ul style="list-style-type: none"> <li>Bohr Model Construction</li> <li>Build an Atom PhET SIM</li> <li>Periodic Table Worksheet (Scavenger Hunt)</li> <li>Periodic Table Project</li> </ul>	<ul style="list-style-type: none"> <li>Discovery Education Science Techbook</li> <li>NGSS Case Studies for Differentiated Learners</li> <li>Next Generation Science Standards: “All Standards, All Students”</li> <li>Extensions - Enrichment Tasks/Project</li> </ul> <p>All information included by the PLC in the differentiation box is the responsibility and ownership of the local school to review and approve per Board Policy IKB.</p> <p>Task-Specific Differentiation</p> <ul style="list-style-type: none"> <li>Scaffolding</li> <li>Leveled Tasks</li> <li>Experimental Design Choices</li> <li>Mode/Method of Representation/Presentation (text, videos, laboratory investigations)</li> </ul>
<p style="text-align: center;"><b>Content Resources</b></p>		
<p>DE Science Techbook: Unit 1: Matter: Concept 1.5: Chemical Reactions and Equations</p> <p>Mosa Mack: Atoms &amp; Molecules</p> <p>PhET: -Build an Atom</p> <p>GaDOE Instructional Segment: You Are What You Eat</p> <p>GaDOE Instructional Segment: Periodic Table</p>		

